

Rice University  
General Announcements  
2001–2002



RICE

*NOTE: This catalog represents the most accurate information available at the time of publication. The university reserves the right to correct or otherwise change any such information without notice at its sole discretion. With respect to course offerings, the departments have attempted to anticipate which courses will be offered, and by whom and when such courses will be taught. However, course offerings may be affected by changes in faculty, student demand, and funding. Although efforts have been made to indicate these uncertainties, course offerings are subject to change without notice.*

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Graduate Study	Chair of the Appropriate Department (see pages 82–85)
Undergraduate and Graduate Students, Undergraduate Curricula	Office of the Vice President for Student Affairs 101 Lovett Hall; 713-348-4996

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## Message from the President

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The *General Announcements* of Rice University is an indispensable resource in the academic life of Rice University. It presents the people, the programs, and the practices that make this university a singular center of higher education. The *General Announcements* serves as a reminder of the high standards to which Rice has always aspired. These standards are as vital and robust as they were when the first students matriculated in 1912.

We welcome your interest in Rice and your attention to the *General Announcements*. I encourage you to familiarize yourself with the information presented here: the distinctive academic backgrounds of our faculty; the rules and responsibilities of student life, both undergraduate and graduate; the diverse scope of our degree programs; and the richness of our curriculum.

Malcolm Gillis  
President  
William Marsh Rice University

# Academic Calendar 2001–2002

## Fall 2001

Sunday–Friday,  
August 19–24 ..... Orientation week for new students

AUGUST						
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Monday, August 27 ..... FIRST DAY OF CLASSES

Monday–Friday,  
August 27–August 31 ..... Registration continues for undergraduate and graduate students

Monday, September 3 ..... Labor Day (holiday)

Friday, September 7 ..... **Deadline:** adding courses without a fee

Friday, September 21 ..... **Deadline:** late registration or adding courses  
**Deadline:** dropping courses without a fee

SEPTEMBER						
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Friday, September 28 ..... **Deadline:** changing Spring 2001 “Pass/Fail” to a grade  
**Deadline:** instructors submitting final grades to clear “Incompletes” from Spring 2001 semester

Friday, October 12 ..... **Deadline:** mid-semester grades for first-year undergraduate students due  
**Deadline:** college course plans due to Vice President for Student Affairs

Monday–Tuesday,  
October 15–16 ..... Midterm recess

OCTOBER						
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Wednesday, October 17 ..... All classes normally held on Monday meet; all Wednesday classes canceled (to equalize holidays by days of the week during the semester)

Thursday, November 1 ..... **Deadline:** filing of  
• thesis master’s candidacy petitions  
• certification of nonthesis master’s  
• form for automatic master’s in the Office of Graduate Studies for mid-year conferral of degree  
**Deadline:** filing Ph.D. candidacy petitions in Office of Graduate Studies for mid-year conferral of degree

Friday, November 2 ..... **Deadline:** last day to drop courses—graduate students and returning undergraduate students

NOVEMBER						
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Monday, November 5 ..... **Deadline:** changing course status to “Pass/Fail” option  
**Deadline:** filing application for mid-year degree conferral

Monday–Friday  
November 12–16 ..... Preregistration begins for currently enrolled undergraduate, graduate, and fifth year students for the Spring 2002 semester  
**Deadline:** applying for Spring 2002 conferral of degree

Monday–Wednesday,  
November 19–21 ..... Self-scheduling of final exams in undergraduate courses  
**Noon Deadline:** Wednesday, November 21

Thursday–Friday,  
November 22–23 ..... Thanksgiving recess

Friday, December 7 ..... **LAST DAY OF CLASSES**  
**Deadline:** last day to drop courses (first semester undergraduate students only)  
**Noon Deadline:** submitting theses in the Office of Graduate Studies for mid-year conferral of degree

DECEMBER						
S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

Saturday–Tuesday,  
December 8–11 ..... Self-scheduled final examinations ONLY

Wednesday–Wednesday  
December 12–19 ..... Self-scheduled final examinations continues

Wednesday, December 19 .... **5:00 P.M. Deadline:** return of take home final examinations

Wednesday, January 2 ..... **5:00 P.M. Deadline:** all final grades due in the Office of the Registrar

## Spring 2002

Monday, January 14 ..... **FIRST DAY OF CLASSES**

Monday, January 21 ..... Martin Luther King, Jr. Day (holiday)

JANUARY						
S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Monday–Friday,  
January 14–18 ..... Registration continues for undergraduate and graduate students

Friday, January 18 ..... **Deadline:** resolving grades of “Other” from Fall 2001 semester

Friday, January 25 ..... **Deadline:** adding courses without a fee

Friday, February 1 ..... **Deadline:** filings of

- thesis master’s candidacy petitions
- certification of nonthesis master’s
- form for automatic master’s

in the Office of Graduate Studies for May 2002 conferral of degree  
**Deadline:** filing Ph.D. candidacy petitions in the Office of Graduate Studies for May 2002 conferral of degree

FEBRUARY						
S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

- Friday, February 8 ..... **Deadline:** late registration or adding courses  
**Deadline:** dropping courses without a fee
- Friday, February 15 ..... **Deadline:** changing Fall 2001 “Pass/Fail” to a grade  
**Deadline:** instructors submitting final grades to clear “Incompletes” from Fall 2001 semester
- Friday, February 22 ..... Majors Day
- Friday, March 1 ..... **Deadline:** mid-semester grades for first-year undergraduate students due  
**Deadline:** college course plans due to Vice President for Student Affairs
- Monday–Friday, March 4–8 ... Midterm recess
- Friday, March 15 ..... **Deadline:** sophomores filing majors with the Office of the Registrar
- Thursday–Friday, March 28-29 ..... Spring recess
- Monday, April 1 ..... **Deadline:** last day to drop courses—graduate students and returning undergraduate students  
**Deadline:** changing course status to “Pass/Fail” option
- Monday–Friday, April 1–5 ..... Preregistration begins for currently enrolled undergraduate, graduate, and fifth-year students for the Fall 2002 semester
- Monday–Wednesday, April 15–17 ..... Self-scheduling of Final Examinations in undergraduate courses
- Friday, April 26 ..... **LAST DAY OF CLASSES**  
**Deadline:** last day to drop courses (for January 2002 undergraduate student admits only)  
**Noon Deadline:** submitting theses in the Office of Graduate Studies for May 2002 conferral of degree
- Saturday–Thursday, April 27–May 2 at Noon ..... Final examinations for all degree candidates
- Wednesday–Wednesday May 1–8 ..... Final examinations for nongraduating students
- Saturday, May 4 ..... **9:00 A.M. Deadline:** grades for all degree candidates due in the Office of the Registrar
- Saturday, May 11 ..... **EIGHTY-NINTH COMMENCEMENT**
- Wednesday, May 15 ..... **9:00 A.M. Deadline:** all remaining grades for nongraduating students due in the Office of the Registrar
- Friday, June 7 ..... **Deadline:** resolving grades of “Other” from Spring 2002 semester

MARCH						
S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

APRIL						
S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

MAY						
S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

JUNE						
S	M	T	W	T	F	S
					1	
2	3	4	5	6	7	8
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16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					



## The University and Campus

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Rice is a private, independent university dedicated to the “advancement of letters, science, and art.” Occupying a distinctive, tree-shaded, nearly 300-acre campus only a few miles from downtown Houston, Rice attracts a diverse group of highly talented students with a range of academic studies that includes humanities, social sciences, natural sciences, engineering, architecture, music, and business management (graduate study only). The school offers students the advantage of forging close relationships with members of the faculty and the option of tailoring graduate and undergraduate studies to their specific interests. Students each year are drawn to this coed, nonsectarian university by the creative approaches it historically has taken to higher education.

One of the unique features of Rice is its residential colleges. Before matriculating, each of the university’s 2,600 undergraduates becomes a member of one of eight residential colleges, which have their own dining halls, public rooms, and dorms on campus; most of the first-year students and close to 65 percent of all undergraduates reside at their associated colleges. Because each student is randomly assigned to one of the colleges and maintains membership in the same college throughout the undergraduate years, the colleges are enriched by the diversity of their students’ backgrounds, academic interests and experiences, talents, and goals. A faculty master, who is assigned to each college and lives in an adjacent house, helps cultivate a variety of cultural and intellectual interests among the students, as well as supporting an effective system of self-government. Other faculty or members of the community serve as associates to individual colleges. The experience of college residence is indispensable to conveying the rich flavor of academic life at Rice, allowing students to combine their usual studies with an array of social events, intramural sports, student plays, lecture series, innovative college-designed courses, and an active role in student government.

Graduate students come to Rice for the chance to work closely with eminent professors and researchers who are seeking to extend the horizons of current knowledge. Although most of the approximately 1,500 graduate students live off campus, taking advantage of the city’s readily available and affordable housing, space is also available in the university-owned Graduate Apartments. Students have a voice within the university community through the Graduate Student Association, which organizes and funds regular social events.

Rice offers students the pleasures and challenges of academic life within the peaceful enclosure of a campus widely acclaimed for its beauty. Campus buildings, including an extensive computer center and the 2 million-volume Fondren Library, form graceful groupings under spreading live oaks. Recent additions include the architecturally stunning Anne and Charles Duncan Hall, a state-of-the-art building for computational engineering; James A. Baker III Hall, which houses the Institute for Public Policy and the School of Social Sciences; and E. Dell Butcher Hall, home to the Center for Nanoscale Science and Technology. Additionally, Rice boasts the largest open-air stadium in the city.

Rice students also enjoy all the commercial and cultural advantages of a major metropolitan center. The school maintains extensive technological links to the area’s many colleges and universities, the acclaimed Texas Medical Center, and other resources. And both students and faculty enjoy Houston’s panoply of cultural offerings, from opera to blues clubs and from a renowned collection of post-impressionist art to alternative art spaces. Rice and Houston together provide an ideal learning and living environment.

## Board of Trustees

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## Student Responsibility

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The university expects all Rice students to exercise personal responsibility over their actions. Their behavior should reflect a respect for the law and for their contractual obligations, a consideration for the rights of others, and shared standards of considerate and ethical behavior.

Rice encourages self-discipline, recognizing that effective student government, including judicial processes, and the integrity of the honor system depend on the willingness of all students to meet community standards of conduct.

The university, however, reserves the right to insist on the withdrawal of any student whose conduct it judges to be clearly detrimental to the best interests of either the student or the university. The appropriate authorities take such action only after careful consideration.

No individual or group may use the name of the university or one of its colleges without prior approval of the university or the college.

### The Honor System

The honor system, one of the oldest and proudest traditions at Rice, is administered by the Honor Council, whose student members are elected each year by the student body. Adopted by a student vote in 1916, the honor system has remained essentially the same since that time but for changes in the procedures and membership of the Honor Council.

Students take all written examinations and complete any specifically designated assignments under the honor system. By committing themselves to the honor system, all students accept responsibility for assuring the integrity of the examinations and assignments conducted under it. The Honor Council is responsible for investigating reported violations and for conducting a hearing when the facts warrant. The assistant dean of student judicial programs, who reviews the results of the investigations and hearing, considers the council's recommendations when issuing penalties.

The Honor Council conducts an ongoing program to acquaint new students and faculty with the honor system.

## Faculty Grading Guidelines

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The Committee on Examinations and Standing has drawn up the following guidelines on grading. Additional information is available on pages 34–36.

- The evaluation of the student's performance in a course and a decision on the appropriate grade is the responsibility of the designated instructor or instructors in the course.
- No student should be given an extension of time or opportunities to improve a grade that are not available to all members of the class, except for verified illness or justified absence from campus. Students who have three scheduled final examinations in two consecutive calendar days may, however, take one of the examinations at another time. Except for scheduled exams, no course assignments may be due between the last day of classes and the last day of the final examination period.
- Students in independent study courses are not to be allowed an extension beyond the time when grades are due. Faculty are to submit grades at the end of the semester for such students based on work completed during the semester. The instructor directing the independent study assumes responsibility with the student for ensuring that the work undertaken is appropriate to the span of a semester and for determining the degree credit to be received.

## 8 GENERAL INFORMATION FOR ALL STUDENTS

- The basis for grading and the expectations on all written assignments or tests should be clearly explained to the class in advance, preferably in writing at the beginning of the semester. The instructor should explain clearly which assignments or homework are covered by the honor system and which are not. To prevent allegations of plagiarism on written assignments, students should be warned that all direct and indirect quotations from other sources should be properly acknowledged. The instructor should explain the extent to which the student's paper is expected to be independent of the references and clearly distinguishable from them.
- Instructors should be willing to give any student an explanation of his or her grade as consistent with the grading for the rest of the class. For this reason, the committee urges the faculty to preserve all examinations and written material not returned to students as well as grade records for the semester for at least one month into the following semester so that students may, if they wish, review with their instructor the basis for the grade received.
- Instructors may not change a semester grade after the grade sheet has been submitted to the registrar, except when there is a clerical error in calculating the grade. This is a long-standing university rule of which the faculty are reminded by the registrar at the end of each semester. It is designed in part to protect the faculty from student pressure for grade changes. All other grade changes, including retroactive change to *withdrawal* or *incomplete*, must be approved by the Committee on Examinations and Standing on the basis of a written petition from the student and on information from the instructor.
- There is no university requirement that a final examination be given in a course. It is university policy that final examinations that cover more than the material since the last examination, that are the only exam in the course, or that are comprehensive of the entire course may be given only during the final examination period. Such examinations may not, for example, be labeled "tests" and administered during the last week of classes. Final examinations are normally of 3-hour duration. Faculty who, under exceptional circumstances, wish to give longer examinations may do so only if the exam is scheduled as take-home. Under no circumstances may final exams exceed five hours. The "due date" for all take-home final exams is the end of the examination period.
- First-year students receive mid-semester grades around the eighth week of the fall and spring semesters so that they can, if advisable, enroll in tutoring or drop a class for which they may not be prepared. Faculty who teach first-year students in any of their classes will be asked to submit grades of standing for these students during the seventh week of the semester and should schedule the grading of tests, quizzes, or homework assignments accordingly. These grades are not recorded on the student's transcript nor calculated in the grade point average, but they are important indicators for students and their faculty advisers.
- Departments using teaching associates, adjunct professors, or visiting faculty of any kind should make sure these teachers are familiar with Rice grading procedures. A regular faculty member who is well-versed in the grading guidelines should be assigned to assist such instructors.

The chair of the Committee on Examinations and Standing or the vice president for student affairs will be glad to advise any faculty member faced with exceptional circumstances that may justify special consideration. Students may petition the committee concerning the application of these guidelines. Suspected or possible violations of the honor system should be submitted to the Honor Council.

## Library and Computing Resources

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Students seeking information for course work and independent or graduate research may visit Fondren Library at the heart of the university campus, or they may access any of a number of campus computing labs and networks.

### Fondren Library

Fondren Library provides a wealth of resources for study and research. Its permanent collection numbers 2 million volumes, more than 2.7 million microforms, 15,000 current periodical and serial titles, and 47,000 titles on audiotape, videotape, and compact disc. The library is well-equipped to meet the needs of students and faculty.

Students exploring the library's extensive holdings can take advantage of its networking systems. With Macintosh, PC, and UNIX workstations scattered throughout the first floor of the library, students looking for information have their choice of print or electronic media. Wireless networking is available on the first floor, and circulating Macintosh Powerbooks are available for students to use in the building.

If they want to postpone a trek to the library, students may use the campuswide information system, **RiceInfo**, to access the library's online catalog. RiceInfo also links students to a wide variety of literature indexes and a growing collection of full-text reference sources, as well as primary literature.

The library staff is committed to the use of evolving information technologies, whether in helping to develop "electronic studios" (collections of applications and tools tailored to a particular subject or need) or in easing user access to networking systems. The library's electronic resources also include multimedia packages and large data sets, and students will find many specialized research tools available, such as computer programs for text analysis and geographic information systems software.

Fondren Library provides a home for a number of separate collections. It is a federal depository for U.S. government publications, patents, and trademarks. The Woodson Research Center holds the library's rare books, manuscripts, and university archives. The library also houses the Alice Pratt Brown Fine Arts Library. The Business Information Center is in Herring Hall.

The library has an open-shelf policy that encourages creative browsing. Students may use a host of special facilities, including individual study carrels, group-study rooms, audiovisual equipment, electronic workstations, and microform reading carrels. Photocopiers are available in the library.

Fondren Library operates on the philosophy that a library is more than a collection of books. It is, instead, an essential campus resource with a knowledgeable staff and up-to-date technologies—an inviting place that introduces students and faculty to a range of rich possibilities as they pursue their independent inquiries.

### Owlnet Computing Resources

**Owlnet** consists of the computing resources available for educational use by members of the Rice community. The Division of Information Technology manages these resources, including the campus labs, software applications, campus network, and dial-up services.

Owlnet is comprised of three platforms: UNIX workstations and Macintosh and PC-compatible microcomputers. Using Owlnet, students complete homework assignments, browse the web or create their own web pages, and use electronic mail to communicate with professors, classmates, friends, and family. All undergraduates are eligible for an Owlnet account.

## 10 GENERAL INFORMATION FOR ALL STUDENTS

**Help.** Each college has three resident student College Computing Associates (CCAs) to help with questions about using personal computers and Rice computing facilities. In addition, computer consultants are available at the Consulting Center, located in 103 Mudd Lab. In general, the Consulting Center is open during normal business hours and can be contacted at 713-348-4983. Questions can be submitted via e-mail to [problem@rice.edu](mailto:problem@rice.edu) or via the web at <http://problem.rice.edu>. Consultants also work at the Reference Desk in Fondren Library during posted hours.

Publications about computing services and how to use supported systems and software are available outside 103 Mudd Lab or on the web at <http://www.rice.edu/Computer/Documents>. Students can learn more about computing by taking a variety of short courses covering many of the programs and operating systems supported by Rice (see [http://www.rice.edu/Computer/Short\\_Courses](http://www.rice.edu/Computer/Short_Courses)). Courses are 1 to 3 hours long and are free to students.

**Student-Owned Computers.** Each college dorm room has one active network drop for every occupant, providing a direct connection to the campus network. College Computing Associates can assist students by installing the necessary network software on their machine in order to connect to the campus network.

Students living off campus can connect to the Rice network via the Rice dial-up service. To learn more about remote access, see our website at <http://www.rice.edu/Computer>.

**Owlnet Computing Labs.** Owlnet computing labs are scattered across the campus, including one in each residential college. Most Owlnet labs are available 24 hours a day with a Rice ID card and proper authorization. Some labs are limited to hours of operations for the building. In addition, note that some computer labs are used as classrooms during certain posted hours. Lists of available hardware and software are available on the web at <http://www.rice.edu/Computer/Facilities>. Some of the larger labs are:

- Fondren Library (1st and 2nd floor)
- Mudd Lab (1st floor)
- Anderson 218
- Ryon Lab 102

**Policies.** Students using Rice computing facilities and services are required to observe Rice's policies and procedures, as well as state and federal laws, governing computer use. A copy of the Appropriate Use of Computing Resources Policy can be picked up in the Consulting Center (103 Mudd Lab) or can be read online at <http://www.ruf.rice.edu/~presiden/Policies/General/832-99.html>.

**For Further Information.** More information about available computing resources and the online account application form for new accounts can be found on RiceInfo's computing web pages (<http://www.rice.edu/Computer>). Students who need help or wish to ask a question can contact the Consulting Center by visiting 103 Mudd Lab, by calling 713-348-4983, or by e-mailing [problem@rice.edu](mailto:problem@rice.edu). Consulting staff can help students get started and can guide them to additional resources.

## Student Health and Counseling Services

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### Student Health Fee

By paying an annual student health service fee, all students gain access to both the Student Health Service and the Rice Counseling Center. Detailed information on the care and services each provide is available from both clinics.

### Student Health Service

This outpatient primary-care clinic in the north wing of Hanszen College is staffed by two physicians and two nurses. Clinic hours are from 8:30 A.M. to 5:00 P.M., Monday through Friday, during fall and spring semesters. For after-hours and weekend medical care, students may choose among a number of local hospitals. Students must pay for all medical care outside the clinic's purview, including blood tests, x-rays, and outside physician consultations. Should such medical care be necessary, students are urged to review their insurance coverage and pick the best available option.

In serious emergencies, students should call the Student Health Service (713-348-4966 during work hours) or the Rice University Police Department (713-348-6000).

The clinic is open full time from the first day of Orientation Week until the day before commencement. It is closed during the Christmas break and the Thanksgiving and Easter weekends, but it remains open in the mornings during midterm breaks. The clinic is also open for reduced hours during the summer months.

The Student Health Service provides the following:

- Primary care for illness and injury with referrals to specialists when needed
- Maintenance of health records for all students
- Immunizations
- Contraceptive counseling and routine Pap smears
- Allergy shots (students must provide serum after a specialist allergy workup)
- Physical examinations (e.g., for employment, transfer to another school, or scholarship expeditions)

**Confidentiality.** The Student Health Service physician-patient relationship is a confidential one, and medical records will not be released except as required by law, or when the patient poses a significant risk to herself or himself or another person.

**Health Insurance.** All Rice students must have health insurance, and **MUST** enter details of their health insurance online at <http://dacnet.rice.edu/services/health> by August 15 to avoid automatic billing. Students may purchase insurance through the university, as described in a brochure sent to incoming and returning students each summer; dependent coverage is also available. For additional brochures and applications, students should contact the Cashier's Office, Student Health Services, or the Rice Counseling Center. Rice's group coverage for the 2001–2002 school year is effective from 12:01 A.M., August 15, 2001, until 12:01 A.M., August 15, 2002.

### Rice Counseling Center

Rice Counseling Center, in 301A Lovett Hall, addresses students' psychological needs with various programs and services. The center is open year-round except for scheduled holidays and occasional all-day staff retreats. Office hours for counseling and consultations are 8:30 A.M. to noon and 1:00 P.M. to 5:00 P.M., Monday through Friday. Students can make appointments by calling 713-348-4867 or by visiting the center.

Typically, most students who use the counseling services bring with them very common concerns: roommate problems, breakup of a relationship, academic and/or interpersonal anxiety, family problems, difficulties adjusting to Rice, or confusion about personal goals, values, and identity. Counselors are equipped to handle a variety of issues, including substance abuse, eating disorders, sexual assault/abuse/date violence, depression, and the coming-out process. Rice Counseling Center offers both individual and group counseling as well as educational workshops and programs.

When students need prolonged or specialized counseling or treatment, counselors refer them to an outside provider. The students, or their health insurance, must pick up those costs. All students who have paid the Health Service Fee are eligible for initial assessment sessions, consultations, crisis intervention, and educational programming.

## 12 GENERAL INFORMATION FOR ALL STUDENTS

Individual or group counseling may also be available, if appropriate.

The Rice Counseling Center provides the following services:

- Initial assessment
- Short-term individual and couples counseling
- Group therapy and support groups
- Medication consultations with the center's consulting psychiatrist
- Other consultations (e.g., how to make a referral or how to respond to a friend in distress)
- Educational programming (e.g., various presentations on mental health issues)
- Crisis intervention on a walk-in emergency basis during regular office hours; students may call 713-348-4867 for assistance with emergencies after hours or on weekends

**College Assistance Peer Program (CAPP).** In this peer educator program, students who have been carefully selected and trained in listening skills and mental-health education serve as supportive listeners and referral sources for other students. They also assist the center with its educational programming.

**Students with Disabilities.** Because students who have physical limitations may find it difficult to reach the Rice Counseling Center's third-floor location in Lovett Hall, staff will arrange to see those students in a more accessible location on campus. Students should call the center to make these arrangements.

**Confidentiality.** Counseling services are confidential: information about a student is not released without that student's written permission. By state law, confidentiality does not extend to circumstances where (1) there is risk of imminent harm to the student or others; (2) the counselor has reason to believe that a child or an elderly or handicapped person is, or is in danger of, being abused or neglected; (3) a court order is issued to release information; (4) the student is involved in a criminal lawsuit; or (5) the counselor suspects that the student has been the victim of sexual exploitation by a former health provider during the course of treatment with that provider.

## Student Resource Centers

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### Rice Memorial Center/Ley Student Center

The Rice Memorial Center/Ley Student Center provides a base for a range of student-centered activities. It is also an informal place where students, faculty, and staff can congregate. Individuals meet over casual meals at Sammy's Cafeteria and drinks at the Coffeehouse and Willy's Pub, which also offers pizzas, sandwiches, and Smoothees as lunch and dinner options. Others browse through the Rice Campus Store. Located within the group of buildings, students find an array of offices, programs, and resource centers, including the Career Services Center, the Community Involvement Center, the Office of Academic Advising, the Rice Program Council, and the assorted student, international student, and graduate student associations. The campus radio station KTRU has offices there, in addition to the *Thresher* (the campus newspaper) and the *Campanile* (the yearbook). The Rice Memorial Chapel anchors one end of the two-center complex, which also houses the Association of Rice Alumni. On any given evening, the larger rooms may be busy with meetings or catered dinners, and members of the Rice community regularly tap the facilities for special events, from parties and concerts to weddings.



### **Career Services Center**

The Career Services Center is open to everyone in the university community. Undergraduates unable to decide on a major, career, or graduate program, or those who lack direction in the path they have chosen, may benefit from career counseling; testing is also available for those interested in a more analytical approach. Peer counselors assist both undergraduate and graduate students with résumé or vita writing, interviewing, and job search strategies.

The center sponsors workshops, career panels, and various career fairs each year. Students will find details on individual events publicized throughout the campus and in *Career News*, a center newsletter. The Career Library also has a substantial collection of resources, including literature on a broad range of occupations, material on locating and securing employment, and information on summer jobs, individual companies, and graduate schools.

Representatives from business, industry, and other institutions visit the center each year, seeking both summer workers and full-time employees. Any interested student may schedule interviews with these representatives. Students looking for full-time, part-time, or summer jobs should also check out the listings in the Career Library.

Undergraduate liberal arts majors seeking to parlay their B.A. degrees into a business career may want to consider the Rice Joint Venture Program, which is sponsored by the Career Services Center. Students accepted into the program undertake internships with Houston-area businesses during one semester.

### **Office of Multicultural Affairs**

Located in the cloisters of the Rice Memorial Center, the Office of Multicultural Affairs responds to the academic and social needs of ethnic minority students at Rice. Primarily providing counseling and support, the office maintains its own library of information on graduate schools, jobs, fellowships, internships, and other opportunities available to minority students once they leave Rice. The office encourages cross-cultural programming on campus and attempts to promote a general awareness of issues related to cultural diversity. The Office of Multicultural Affairs is central to the university's continuing efforts to recruit and retain more minority students.

### **Health Education Office**

Also lodged in the cloisters of the Rice Memorial Center, the Health Education Office runs programs on such issues as sexual health awareness, substance abuse prevention, nutrition and diet, and acquaintance rape. The office provides students with private consultations and a resource room containing health-related literature, including brochures, journals, and posters. Student volunteers with the Health Education Office participate in groups such as Students Organized Against Rape (SOAR) and serve as health representatives for their colleges.

### **Disability Support Services**

Located in the Ley Student Center, Disability Support Services coordinates campus accommodations for individuals with documented disabilities. Adaptive equipment, such as assistive listening devices, recordings for the blind and dyslexic, and temporary mobility assistance is available for students with specific needs. Information is maintained on scholarships, internships, and other resources specific to students with disabilities. Counseling and advocacy are available as well as consultation on the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973.

## Sports

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### Intercollegiate Athletics

Rice is a member of the Western Athletic Conference and a Division I-A member of the National Collegiate Athletic Association. The university fields teams for men in football, basketball, baseball, tennis, golf, cross-country, and indoor and outdoor track. Women team sports include basketball, volleyball, soccer, swimming, tennis, cross-country, and indoor and outdoor track. Home football games are played in the beautiful 70,000-seat Rice Stadium. The rest of the university's extensive athletic facilities include Autry Court and Fox Gymnasium for basketball and volleyball, Reckling Park for baseball, the Jake Hess Tennis Stadium, the Rice Track/Soccer Stadium, and the John L. Cox Fitness Center. Encouraging its student-athletes to pursue high goals, Rice prides itself on its dual goal of excellence in both academics and athletics; the rigors of one may not serve as an excuse for less than high-quality performance in the other.

### Intramural Sports

The Department of Kinesiology offers a supervised program of intramural sports for all students, faculty, and staff. Anyone may participate in individual, dual, or team sports; swim meets; and track and field events. Interested students, faculty, and staff may also form teams to compete in the wide variety of tournaments available. While all students may take part in the university intramural tournaments, undergraduates may also represent their respective colleges in the college team sports tournaments that follow intramural play. In the past few years, Rice has seen more than 6,000 entries in 53 tournaments. Students are reminded, though, that they participate at their own risk.

### Sports Clubs

In addition to the intramural program, the Department of Student Activities administers a sports club program. A sports club is a special-interest group organized by students who want to play, and promote interest in, a particular sport. Club organization depends on student interest. In recent years, clubs have included badminton, cricket, cycling, dance, fencing, field hockey, frisbee, lacrosse, martial arts, rowing, rugby, sailing, shooting, soccer, softball, and volleyball. Students join these groups to increase both individual and team skills through a dual program of instruction and competition. They support the clubs with individual contributions, membership dues, solicitation of university funds, and various fund-raising activities. Again, students participate in the different sports at their own risk.

## Student Automobiles

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All students must register their vehicles with the Traffic Division of the Rice University Police Department. Students must park in assigned areas and observe university regulations. Illegally parked or unregistered vehicles are subject to towing and/or fines by the university. Copies of *University Traffic and Parking Regulations*, a publication giving a detailed account of student privileges and responsibilities, are available from the Traffic Division or online at <http://rupd.rice.edu/parkingregs>. Students must inform all guests of parking regulations; vehicles belonging to visitors who repeatedly violate these rules also may be towed or booted.

## Introduction

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The undergraduate experience at Rice is one of intense personal interactions. The close sense of community created by individual placement in residential colleges is extended to warm intellectual and personal relationships with members of the Rice faculty. “Behind the hedges,” the beautifully designed, spacious campus is small enough to encourage a sense of belonging even as students engage with the lively cultural currents of one of the country’s largest cities.

The academic philosophy at Rice is to offer students beginning their college studies both a grounding in the broad fields of general knowledge and the chance to concentrate on very specific academic and research interests. By completing the required distribution courses, all students gain an understanding of the literature, arts, and philosophy essential to any civilization, a broad historical introduction to thought about human society, and a basic familiarity with the scientific principles underlying physics, chemistry, and mathematics. Building on this firm foundation, students then concentrate on studies in their major areas of interest.

Rice University is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools (SACS), the recognized regional accrediting body in the eleven U.S. Southern states.

Rice grants the two undergraduate degrees, the Bachelor of Arts (B.A.) and the Bachelor of Science (B.S.), in a range of majors. The majority of undergraduates earn the B.A. degree, though students may elect to pursue the B.S. degree, offered at Rice in some science fields and in various fields of engineering accredited by the Accreditation Board for Engineering and Technology (ABET). Undergraduates may major in any of the numerous fields provided by the various schools of architecture, humanities, music, social sciences, science, and engineering. To accommodate the full range of individual student interests, specific interdepartmental majors are also available, as are selectively approved area majors. In certain departments, students also have the option of overlapping the upper-level course work of their undergraduate degree with those basic requirements necessary to earn a higher degree in the field, considerably reducing the time required to complete their graduate studies. The Shepherd School of Music offers a joint degree in music (B.Mus./M.Mus) that may be completed with a fifth year of study.

Through Rice’s Department of Education, students interested in teaching in secondary schools may complete a program of teacher training, leading to certification in the state of Texas, together with the B.A. degree. Students interested in satisfying the requirements for admission to medical, dental, or law school should consult with the Office of Academic Advising for completing these programs in conjunction with the various majors.

## Graduation Requirements

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### Degree Requirements for All Bachelor’s Degrees

Students are responsible for making certain that their plan of study meets all degree and major requirements. To graduate from Rice University, all students must:

- Be registered at Rice full time for at least four full fall and/or spring semesters
- Complete the requirements of at least one major degree program
- Complete at least 120 semester hours (some degree programs require more than 120 hours)
- Complete at least 60 semester hours at Rice University
- Complete at least 48 hours of all *degree* work in upper-level courses (at the 300 level or higher)

- Complete more than half of the upper-level courses in *degree* work at Rice
- Complete more than half of the upper-level courses in their *major* work at Rice (certain departments may specify a higher proportion)
- Complete all Rice courses satisfying *degree* requirements with a cumulative grade point average of at least 1.67 or higher
- Complete all Rice courses satisfying *major* requirements with a cumulative grade point average of at least 2.00 or higher
- Satisfy the English composition requirement (see below)
- Satisfy the Lifetime Physical Activity Program (LPAP) requirement (see below)
- Complete courses to satisfy the Distribution Requirements (see below)
- Otherwise be a student in good academic and disciplinary standing

To satisfy the English composition requirement, students must pass an English composition examination given during Orientation Week. Those receiving grades of “not satisfactory” on the exam must complete ENGL 103 *Basic Composition*, a one semester course carrying degree credit.

To satisfy the LPAP requirement, students must complete 2 courses in LPAP. Although 2 courses are required, they do not carry degree credit and do not count toward the total semester hours at graduation. Students with disabilities may make special arrangements to satisfy this requirement.

### Distribution Requirements

Each student is required to complete at least 12 semester hours of designated distribution courses in each of Groups I, II, and III. The 12 hours in each group must include courses in at least two departments in that group. (Divisional or interdisciplinary designations, e.g. HUMA, NSCI, etc., count as departments for this purpose.) Interdivisional courses approved for distribution credit may count toward the 12 semester hours in any relevant group; however, students may not count any one such course toward the 12 required hours in more than one group, and may count no more than one such course toward the 12 required hours in any one group.

Students must complete the distribution requirements in each group by taking courses that are designated as a distribution course at the time of course registration, as published in that semester’s *Schedule of Courses Offered*.

The distribution system presupposes that every Rice student should receive a broad education along with training in an academic specialty. This goal is achieved by courses that are broad based, accessible to nonmajors, and representative of the knowledge, intellectual skills, and habits of thought that are most characteristic of a discipline or of inquiry across disciplines.

**Group I.** These courses have one or more of the following goals. They develop students’ critical and aesthetic understanding of texts and the arts; they lead students to the analytical examination of ideas and values; they introduce students to the variety of approaches and methods with which different disciplines approach intellectual problems; and they engage students with works of culture that have intellectual importance by virtue of the ideas they express, their historical influence, their mode of expression, or their critical engagement with established cultural assumptions and traditions.

**Group II.** Three types of courses fulfill this requirement. The first are introductory courses which address the problems, methodologies, and substance of different disciplines in the social sciences. The second are departmental courses which draw upon at least two or more disciplines in the social sciences or which cover topics of central importance to a social science discipline. The third are interdisciplinary courses team-taught by faculty from two or more disciplines.

**Group III.** These courses provide explicit exposure to the scientific method or to theorem development, develop analytical thinking skills and emphasize quantitative analysis, and expose students to subject matter in the various disciplines of science and engineering.

**Bachelor of Arts**

The specific requirements of individual majors leading to the Bachelor of Arts degree vary widely. No department may specify more than 80 semester hours (required courses, prerequisites, and related laboratories included) for the Bachelor of Arts. To qualify for the Bachelor of Arts:

- All students must complete at least 120 hours of course work.
- Students in the humanities and social sciences must complete between 18 and 80 hours in course work within the major (including required courses, prerequisites, and related laboratories)
- Students in the sciences and engineering must complete between 24 and 80 hours in course work within the major (including required courses, prerequisites, and related laboratories)
- Students in all fields except architecture must complete at least 60 hours in course work outside the major
- Students in architecture must complete at least 38 hours in course work outside the major

**Bachelor of Science in the School of Natural Sciences**

The Bachelor of Science degree is offered in astrophysics, chemistry, chemical physics, geology, and physics. The specific degree requirements vary from field to field and differ from those of the Bachelor of Arts in that there are greater technical requirements. No department may specify more than 80 semester hours (required courses, prerequisites, and related laboratories included) for the Bachelor of Science. To earn a B.S. degree in one of these fields, students must complete at least 60 hours in course work outside the major.

**Bachelor of Science Degrees in Engineering: Bachelor of Science in Chemical Engineering (B.S.Ch.E.), Civil Engineering (B.S.C.E.), Computer Science (B.S.C.S.), Electrical and Computer Engineering (B.S.E.E.), Materials Science (B.S.M.S.), Mechanical Engineering (B.S.M.E.), and Bioengineering (B.S.B.)**

The Bachelor of Science degree in a given engineering field is distinct from the B.A. degree in that it must meet greater technical requirements. In establishing a departmental major for the degree of Bachelor of Science in civil engineering, electrical and computer engineering, materials science, and mechanical engineering, the department may specify no more than 92 semester hours (required courses, prerequisites, and related laboratories included). In establishing the departmental major for the B.S. in chemical engineering, the department may specify no more than 100 semester hours (required courses, prerequisites, and related laboratories included). The bioengineering department specifies 94 semester hours for the B.S. degree (required courses, prerequisites, and related laboratories included). To earn a B.S. degree, students must meet the following minimum semester hour requirements in course work:

- All majors except chemical engineering and computer science—a total of at least 134 hours
- Chemical engineering majors—up to 137 hours, depending on ABET requirements
- Computer science majors—a total of at least 128 hours

**Other Bachelor's Degrees**

The professional Bachelor of Architecture (B.Arch.) degree requires a fifth year of study and a one-year preceptorship. The Bachelor of Music (B.Mus.) degree requires advanced courses in aural skills in addition to the core music curriculum.

## Undergraduate Majors

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Students usually decide on a major by the end of their sophomore year, if not sooner. Majors Day, held each spring, brings together representatives of all departments and preprofessional offices to answer questions and provide students with information about their programs. Within the traditional departmental majors, students sometimes have the choice of a particular **area of concentration**, as is the case in electrical engineering, German, and economics. Students also may opt for **more than one major**; such majors do not necessarily need to be in related fields. More detailed information on the departmental majors briefly described below may be found in the Undergraduate Degree chart (see pages 23–25) and by contacting the department chairs or faculty advisers.

### Departmental Majors

**School of Architecture.** Students interested in architecture may choose between the four-year B.A. program or the six-year Bachelor of Architecture (B.Arch.) degree. Students completing the four-year B.A. who have been admitted to the B.Arch. program during their senior year spend a fifth year in a working preceptorship with an architectural firm, returning to Rice to complete a final year of architectural study for the degree.

**George R. Brown School of Engineering.** Rice offers, through nine departments, majors in bioengineering, chemical engineering, civil engineering, computational and applied mathematics, computer science, electrical and computer engineering, mechanical engineering, materials science and engineering, and statistics. Students may elect a double major by combining environmental science with another science or engineering field. These programs lead to either the B.A. or the B.S. degree and may qualify students for further graduate study.

**School of Humanities.** Students may declare majors in art and art history, classics, English, French studies, German and Slavic studies (includes Russian), Hispanic studies, kinesiology, history, linguistics, philosophy, and religious studies. Interdisciplinary majors are available in ancient Mediterranean civilizations, Asian studies, medieval studies, and the study of women and gender, while an interdepartmental major in policy studies combines courses from the School of Humanities and the School of Social Sciences.

**Shepherd School of Music.** Music students may opt for either a B.A. or a Bachelor of Music (B.Mus.) degree in performance, composition, music history, and music theory. Students who pass a special qualifying examination may elect an honors program that leads to the simultaneous awarding of the B.Mus. and Master of Music (M.Mus.) degrees after five years of study.

**Wiess School of Natural Sciences.** All natural sciences departments, including biochemistry and cell biology, chemistry, ecology and evolutionary biology, earth science, mathematics, and physics and astronomy offer programs leading to the B.A. degree. B.S. degrees are offered in some departments. Majors include astronomy, biochemistry, biology, biophysics, chemical physics, chemistry, geology, geophysics, mathematics, and physics. Students may also elect double majors combining one of the programs in natural sciences with another science, a humanities discipline, or an engineering field.

**School of Social Sciences.** Rice offers majors in anthropology, economics, mathematical economic analysis, political science, psychology, and sociology. Both the interdepartmental policy studies major and the cognitive studies major include sciences, engineering, and humanities courses, while the managerial studies major incorporates course work in the Schools of Engineering and Management.

### Area Majors

Should the traditional departmental majors or programs not meet their exact needs, students may develop an area major closer to their particular interests and career goals. Area majors differ from double majors in that the latter must conform to the requirements of both departments while the former is a single major: It may combine courses from two or more departments, but it maintains its own specific major requirements. Area majors are limited by the available academic resources and must be distinct from other majors offered at Rice. Students who elect to declare an area major may not use it to form a double major, and they must still meet all the other university graduation requirements. See also Area Majors (page 31) under Academic Regulations beginning on page 29.

### Interdepartmental Majors

Interdepartmental majors combine courses taught by faculty from more than one department; they are listed separately in the Undergraduate Degree Chart (pages 23–25).

## Other Academic Undergraduate Options

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### Rice/Baylor College of Medicine Medical Scholars Program

The Medical Scholars Program is for talented and motivated students who are scientifically competent, socially conscious, and capable of applying insight from the liberal arts and other disciplines to the study of modern medical science. Up to 15 graduating high school seniors are admitted to Rice and Baylor College of Medicine concurrently: The traditional four years at Rice are followed by four years at Baylor. Applications for the program are sent to those who indicate their interest on their Rice applications. However, students must have applied under the Early Decision or Interim Decision plans (see pages 45–46). Interviews are scheduled in late March, and decisions are made in April. Early Decision applicants must have Rice as their first-choice school, regardless of the Baylor decision to be made later in the spring. Applicants not admitted to the Medical Scholars Program are still eligible for admission to Rice and may still apply to Baylor upon graduation from Rice.

### W. M. Keck Center for Computational Biology Research Training Program

Undergraduates may take advantage of research training opportunities in computational biology offered by this joint project of Rice, Baylor College of Medicine, and the University of Houston. Students in biophysics, cell biology, evolutionary biology, computer science, statistics, mathematics, physics, chemistry, computational and applied mathematics, and engineering may apply for a summer program that provides hands-on research under faculty mentorship in lab settings, seminars and workshops, and access to the advanced computational and analytical resources offered by the center.

### Leadership Rice

Leadership Rice develops the leadership capacities of undergraduates from all disciplines. The program links theory to practice and analysis to action with experiential opportunities and classes. It encourages students to look beyond how to get a good education and good grades and to begin to consider how they can use their great education to make a positive contribution to the world.

The program is especially recommended for second semester sophomores, who are invited to begin with UNIV 309 and then to participate in all aspects of the program, but it is open to all students—including freshmen.

The core component of Leadership Rice is the Summer Mentorship Experience. Students accepted into the program work under the tutelage of experienced mentors for eight weeks during the summer and are given a \$3,000 stipend. Mentorships are in the private, nonprofit, and public sectors in U.S. and abroad. Students also are invited to take on leadership roles in the administration of the program. Recent mentorships as well as more information on Leadership Rice are posted on the web at [www.rice.edu/leadership](http://www.rice.edu/leadership).

Currently, Leadership Rice offers 3 courses for academic credit. UNIV 309 Creating and Managing Change: Principles of Leadership, with lectures from some of the finest professors at Rice, introduces students to leadership ideas in the context of diverse disciplines. This course includes a team project along with discussion on what makes effective teams, as well as work on writing clearly and persuasively. Students enrolled in UNIV 309 have priority in applying for summer mentorships. UNIV 310, Creating and Managing Change, is required for all students accepted for the Summer Mentorship. UNIV 311 is a one-credit seminar on creativity open to all students.

Leadership Rice sponsors the Rice-on-Board program, which places students on nonprofit community boards as participant observers for a year. It also oversees the Envision Program and the Janus Award. Envision funds, offered three times each year, provide seed money to students for first-time projects of benefit to the community, either on campus or beyond. The Janus Award offers one undergraduate the opportunity to research an environmental or science-related issue from multiple perspectives.

Leadership Rice believes that every Rice student is capable of creating positive change. The program aims to help students develop the confidence and commitment as well as the skills to achieve this end.

### Premedical, Prelaw, and Prebusiness Programs

In addition to the preprofessional and professional programs offered by Rice in architecture, business management, engineering, and music, students may pursue programs that satisfy the admission requirements for graduate schools in business, dentistry, diplomacy and foreign affairs, health science, law, and medicine. Interested students may contact various advisers with offices in the Ley Student Center, including health professions advisers for premedical or predoctoral studies and other professional programs in the health sciences, a prelaw adviser for prelegal studies, and a prebusiness adviser for business, finance, and accounting.

**Junior-Year Admission.** Students who plan to enter medical school or any other professional or graduate school at the end of their junior year at Rice can arrange to receive a Rice four-year bachelor's degree by submitting to the Committee on Examinations and Standing a degree plan that fulfills all normal university and departmental requirements for the bachelor's degree. Students *must* submit a degree plan before they begin graduate or professional training. The Committee on Examinations and Standing then reviews the degree plan submitted by each student and gives final approval.



## 22 INFORMATION FOR UNDERGRADUATE STUDENTS

Students who want to take advantage of this junior-year admission may apply no more than 30 to 40 semester hours (10 courses) in transfer credit (courses must be acceptable to the student's major department and the registrar).

**Premedical and Predental Programs.** The entrance requirements for U.S. medical and dental schools include one year each of general chemistry, organic chemistry, physics, mathematics, biology, and English, plus laboratories required by the science courses. Because medical and dental schools seldom favor any one area of study, students may choose their majors according to their interests and capabilities. Their degree plans should provide them with both a broad cultural background and the necessary skills for an alternative career. Science or engineering majors will automatically satisfy most of the entrance requirements for medical or dental school, but students majoring in the humanities will need to make some adjustments in their study plans. Premedical and predental students should discuss their degree plans with the health professions advisers.

**Prelaw Program.** All degree programs offered at Rice satisfy the academic requirements for admission to law school. While many prelaw students major in history, political science, or economics, no law school specifies particular courses or curricula as prerequisites to admission. Most require only a baccalaureate degree and the passing of the Law School Admission Test. When selecting a major, students should simply keep in mind the provision in *The Official Guide to U.S. Law Schools* (published by the Law School Admission Council/Law School Admission Services in cooperation with the American Bar Association and the Association of American Law Schools) that prelegal education should develop oral and written comprehension and expression, as well as creative thinking and critical understanding of human values. While no particular discipline is paramount, the prelaw adviser usually recommends that students take expository writing courses and beginning accounting and economics courses. Interested students should contact the prelaw adviser. The guide to law schools cited above, reference books, and the catalogs of many leading law schools are available in the prelaw office in the Office of Academic Advising, Ley Student Center.

**Prebusiness Program.** Business schools consider the following when admitting students to their Master of Business Administration (M.B.A.) programs:

- Scholastic aptitude, as evidenced by undergraduate grades and performance on the Graduate Management Admission Test (GMAT)
- Extracurricular activities
- Work experience
- Effective oral and written communication

While no specific undergraduate major is preferred, students should select a major (or majors) where their academic performance is likely to be the strongest. The prebusiness adviser recommends that students take ECON 211/212 Principles of Economics I and II and ACCO 305 Introduction to Accounting as courses helpful for graduating seniors seeking employment in the private or public sector (most schools prefer students with relevant full-time work experience). Calculus has become increasingly important to business schools as well.

Interested students should consult the prebusiness adviser early in their undergraduate years. Because business schools differ in their objectives, curricula, teaching methods, job placement possibilities, and admission standards, students should be familiar with the programs of different schools before applying. The prebusiness adviser can also suggest the kinds of work experience that schools typically prefer.

**Reserve Officers' Training Corps (ROTC) Programs**

Rice hosts a Naval ROTC program, and students may participate in Army ROTC through a cross-enrollment program with the University of Houston. These programs train select college students who, upon graduation, receive reserve commissions as officers in the United States Army, Navy, or Marine Corps.

Most students enroll in the ROTC programs at Rice at the beginning of the fall term. While courses in naval science and military science are open to any student, they count as free electives and cannot satisfy a student's distribution requirements or departmental major requirements. The provost determines the credit assigned to each course in consultation with the Committee on the Undergraduate Curriculum. Performance in ROTC courses, however, weighs in the determination of probation, suspension, course load, and grade point average. Students suspended by the university for academic failure or other reasons are immediately discharged from the ROTC programs, as are students producing unsatisfactory course work and those lacking sufficient officer-like qualities, regardless of their academic performance.

For additional information on the ROTC programs and available scholarships, see both military science and naval science in the Departments and Interdisciplinary Programs and Courses of Instruction sections.

**UNDERGRADUATE DEGREE CHART**

School Department	Undergraduate Degrees Offered	Additional Options or Areas of Concentration (within majors)
<b>SCHOOL OF ARCHITECTURE</b>		
	B.A., B.Arch.	B.A. majors in architecture and in architectural studies
<b>GEORGE R. BROWN SCHOOL OF ENGINEERING</b>		
Bioengineering	B.S.	Areas of concentration in cellular and molecular engineering, systems engineering and biomedical instrumentation, and biomaterials and biomechanics
Chemical Engineering	B.A., B.S.Ch.E.	Focus areas in bioengineering, environmental science/engineering, materials science/engineering, and computational science/engineering
Civil and Environmental Engineering	B.A., B.S.C.E.	Civil engineering: options in structural engineering, environmental engineering, and engineering management Environmental engineering: B.A. as double major with any other Rice major; see also civil engineering and chemical engineering for B.S. options
Computational and Applied Mathematics	B.A.	Numerical analysis, operations research, optimization, differential equations, and scientific computation
Computer Science	B.A., B.S.C.S.	Areas of concentration in architecture, artificial intelligence, computational science, foundations, human-computer interaction, and software systems
Electrical and Computer Engineering	B.A., B.S.E.E.	Areas of concentration in communications and signal processing, computer architecture and networking, electro-optics, and device physics
Mechanical Engineering and Materials Science	B.A., B.S.M.E., B.S.M.S.	Majors in mechanical engineering and materials science and engineering
Statistics	B.A.	Theoretical and applied training orientations; engineering, scientific, and business applications of probability and statistics; joint work in related departments

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School Department	Undergraduate Degrees Offered	Additional Options or Areas of Concentration (within majors)
<b>SCHOOL OF HUMANITIES</b>		
Art and Art History	B.A., B.F.A.	Tracks in history of art and studio art; special fifth-year courses for B.F.A. candidates
Education	No undergraduate degree offered	Leads to secondary teaching certificate in conjunction with B.A. in major field
English	B.A.	
French Studies	B.A.	
German and Slavic Studies	B.A.	German and German cultural studies, and Russian/Slavic studies
Hispanic and Classical Studies	B.A.	Spanish language and literature, Latin American studies, classics, Greek, Latin, and Portuguese
History	B.A.	
Kinesiology	B.A.	Areas of concentration in exercise science, sports medicine, and sports management
Linguistics	B.A.	Areas of concentration in language, cognitive science, second language acquisition, and language, culture, and society
Philosophy	B.A.	
Religious Studies	B.A.	Distribution requirements in methodology and religious traditions
<b>JESSE H. JONES GRADUATE SCHOOL OF MANAGEMENT</b>		
	No undergraduate degree offered	Four accounting courses open to all undergraduates
<b>SHEPHERD SCHOOL OF MUSIC</b>		
	B.A., B.Mus.	B.A. in music; B.Mus. in composition, music history, music theory, and performance; joint B.Mus./M.Mus. with fifth year of study
<b>WIESS SCHOOL OF NATURAL SCIENCES</b>		
Biochemistry and Cell Biology	B.A.	Part of an integrated biosciences curriculum
Chemistry	B.A., B.S.	Chemical physics major offered jointly with physics resulting in a B.S. degree
Ecology and Evolutionary Biology	B.A.	Part of an integrated biosciences curriculum
Earth Science	B.A., B.S.	Majors in geology and in geophysics
Mathematics	B.A.	300-level courses oriented toward problem solving and applications and 400-level and above oriented toward theory and proofs; preparation for graduate studies or high school teaching or other areas; ample opportunity for double-majoring, especially with CAAM, COMP, ELEC, or PHYS; abundance of courses in analysis, topology, geometry, algebra, etc.
Physics and Astronomy	B.A., B.S.	Majors in physics with specific options in applied physics, biophysics, astrophysics, and astronomy; interdepartmental major in chemical physics
<b>SCHOOL OF SOCIAL SCIENCES</b>		
Anthropology	B.A.	Areas of concentration in archaeology and social/cultural anthropology
Economics	B.A.	Majors in economics and in mathematical economic analysis
Political Science	B.A.	
Psychology	B.A.	
Sociology	B.A.	

School Department	Undergraduate Degrees Offered	Additional Options or Areas of Concentration (within majors)
<b>INTERDEPARTMENTAL MAJORS</b>		
Area Majors	B.A.	Two or more departments and the Office of Academic Advising
Ancient Mediterranean Civilizations	B.A.	Anthropology, classical studies, Greek, Latin, history, history of art, linguistics, philosophy, and religious studies
Asian Studies	B.A.	Anthropology, art, history of art, history, humanities, linguistics, Chinese, Japanese, Korean, Sanskrit, political science, and religious studies
Cognitive Sciences	B.A.	Anthropology, cognitive sciences, computer science, electrical engineering, linguistics, philosophy, psychology, sociology, and statistics
Managerial Studies	B.A.	Accounting, computational and applied mathematics, economics, political science, psychology, and statistics
Medieval Studies	B.A.	History of art, classics, English, French, German, history, humanities, linguistics, Spanish, music, philosophy, political science, and religious studies
Policy Studies	B.A.	Environmental policy, government management, healthcare policy, international affairs, law and justice, business policy, and political management
Study of Women and Gender	B.A.	Anthropology, classics, English, French studies, German, history, humanities, linguistics, music, philosophy, religious studies, and sociology

### Teacher Certification

Students in the teacher education program earn Texas state teacher certification at the secondary level. Subjects include art, biology, chemistry, computer science, earth science, economics, English, French, general science, geology, German, health sciences, history, Latin, life-earth science, mathematical sciences, physical education, physical sciences, physics, political science, psychology, Russian, social studies, sociology, and Spanish. For more information on teacher certification programs at the undergraduate and graduate levels, see Education in the Departments and Interdisciplinary Programs and Courses of Instruction sections.

### Off-Campus Study and Exchange Programs

Each year more than 200 undergraduates from many different majors study away from campus, applying the transfer credit earned toward their degrees. The study abroad advisers and faculty advisers in each department help these students select their programs and arrange for credit transfers. (Rice follows the same general guidelines when transferring credit from both foreign and domestic universities.) In order to assure proper enrollment and transfer of credits, students planning to study abroad must make their arrangements through the Department of International Programs. This will include arranging prior approval for transfer credit through the relevant academic department(s) and the registrar. Detailed information on all programs, including application forms, is available from the Office of Academic Advising and International Programs (Ley Student Center).

### **Affiliated Programs**

**American University's Washington Semester Program.** Students majoring in policy studies or related fields may participate in American University's Washington Semester Program, which consists of a full semester's course work at American University and an internship that exposes its participants to the operations of different branches of the federal government. American University, located in Washington, D.C., offers separate programs in American politics, U.S. foreign policy, journalism, economic policy, justice, public law, and peace and conflict resolution. Students interested in the program should contact Professor Donald Ostdiek in the political science department.

**Biosphere 2.** What began as an experiment in closed-system living has developed into the world's largest and most sophisticated environmental laboratory. Now part of the Columbia University Earth Institute, Biosphere 2 Center, located in Oracle, Arizona, is committed to furthering research and to providing learning opportunities focused on sustaining and developing our planet's environment. Undergraduate programs take an interdisciplinary approach to the study of the earth and its systems (political, cultural, and economic, as well as physical and biological) and provide opportunities for students to conduct their own research. The program is well-suited to majors in environmental science and policy studies but is open to students from all disciplines.

**C. D. Broad Exchange Program with Trinity College, Cambridge.** This exchange program sponsored by the Student Aid Foundation Enterprises involves both students and faculty, linking Rice with Trinity College in Cambridge. Students compete for the chance to undertake one year of study as a visiting student at Trinity College; a Trinity student comes to Rice in alternate years.

**Butler University Institute for Study Abroad.** Rice's affiliation with Butler University Institute for Study Abroad enables students to enroll directly at many prestigious universities in England, Ireland, Scotland, Australia, and New Zealand. Students may stay for the full academic year or for one or two terms. The universities in Great Britain include a wide array of schools both in and outside London; schools in Australia and New Zealand include the Universities of Melbourne, Sydney, and Auckland. Butler ISA also cooperates with programs in Argentina, Chile, Cuba, and Costa Rica.

**Center for Education Abroad at Arcadia University (formerly Beaver College).** With more than 50 years of experience in study abroad, the Center for Education Abroad facilitates enrollment at numerous universities throughout Australia, England, Ireland, New Zealand, Scotland, and Wales. Additionally, CEA administers programs in Equatorial Guinea, Greece, Italy, Mexico, and Spain. Semester, full year and summer options are available.

**China Cooperative Language and Study Programs Consortium.** Under the auspices of the Council on International Education Exchange (CIEE), Rice participates in a consortium that offers students the opportunity to study at Peking University and Nanjing University in China and at National Chengchi University in Taipei. Prospective participants should consult with faculty teaching in the Asian studies major.

**Denmark's International Study Program.** Full-year, semester, and summer programs in Copenhagen are open to Rice students through this program established under the Danish Ministry of Education and the University of Copenhagen. Academic offerings, which focus on liberal arts, biology, engineering, and architecture and design, include study tours to Russia and Europe. Prior knowledge of the Danish language is not required.

**Exchange Program with the Federation of German-American Clubs.** Rice students with at least two years of college German language credit may apply for the 10-month exchange program co-sponsored by Rice and the Federation of German-American Clubs. Successful applicants enroll in a university in one of 20 locations throughout Germany. The faculty of the Department of German and Slavic Studies, in cooperation with the Department of International Programs, selects one or two Rice students each year for an even exchange with German students. The Federation of German-American Clubs assigns students to their respective universities, according to their preferences as well as their individual qualifications and field of study. Rice students pay Rice tuition, room and board, which are applied toward the expenses of their exchange partner. While in Germany, Rice students are then supplied with tuition and a monthly stipend for room and board. In addition, the Federation of German-American Clubs provides transportation, entertainment, housing for students to attend five to six meetings in various locations throughout Germany. Students should submit their applications by late February. Applications are available in the Department of International Programs.

**Global Engineering Education Exchange (Global E3).** This international exchange program allows engineering students to gain practical training overseas at participating universities while receiving Rice credit. Currently, more than 70 universities in 13 countries are members of the Global E3 program. Member countries include Australia, Austria, Denmark, France, Hungary, Japan, Mexico, Singapore, Spain, Korea, Turkey, the United Kingdom, and the United States. Some member institutions conduct courses in English, and at others, foreign language is required. Almost all engineering disciplines are available among the many Global E3 member institutions, although not every discipline is available at every school. Through tuition swaps, students continue to pay tuition to their home campuses rather than to the overseas host universities. Engineering students at the junior or senior level are eligible for the program, and students can participate for a summer, semester, or academic year.

**Institute for the International Education of Students (IES).** Rice is an affiliate university of IES, a system of centers in Berlin, Dijon, Dublin, Freiburg, LaPlata, London, Madrid, Milan, Nantes, Paris, Salamanca, Vienna, Adelaide, Melbourne, Beijing, Tokyo, Kasugai, and Nagoya. In most cases, the institute centers are associated with a host university; students may take courses offered by both the center and the university. Counselors and faculty from IES and the host university help students select courses, facilitate registration, arrange for university examinations, and provide transcripts to Rice.

**International Studies Abroad (ISA).** Established in 1987 to facilitate study abroad programs for American college students, ISA offers quality summer, semester and full year options in Spain, France, Mexico, Costa Rica, Chile, Argentina and Australia. All language-based ISA programs emphasize language acquisition and cultural immersion for students at various levels of proficiency. Students on these programs have the opportunity to take classes with students from the host university while living with a host family. ISA is committed to student service and can often design programs to meet individual student needs. All ISA programs include a number of cultural excursions.

**Intercollegiate Center for Classical Studies in Rome.** This Rice-affiliated center in Rome focuses on classical studies. Operated through Duke University, this semester-long program offers undergraduate courses taught by European and American professors in Greek and Latin literature, ancient history and archaeology, and ancient art. This program is particularly suited to majors in ancient Mediterranean civilizations, although juniors or seniors majoring in art history or classics would benefit as well.

**Rice Fall Semester Program in Chile.** The Department of Hispanic and Classical Studies offers a one-semester program each fall in conjunction with the University of Chile in Santiago. Students in good standing who are reasonably proficient in Spanish may apply. They take courses both from the Rice professor who accompanies the group (in advanced Spanish) and from the University of Chile (in a number of fields). The program often includes students from other U.S. universities. Further information is available from the department office in 103 Rayzor Hall.

**Rice University–Kyushu University Exchange Program.** Japan in Today's World (JTW) is a two-semester program that enables students from select universities to study Japanese economy, science, language, and culture at Kyushu University's Fukuoka City campus. Highly motivated students with sophomore standing and a good academic record may apply. Courses are taught in English (except for Japanese language courses) and no previous Japanese language study is required. However, students are encouraged to take classes in Japanese and Asian studies before entering the program.

Kyushu University also offers a six-week summer program in which students may focus on Humanities and Social Sciences or the Natural Sciences, as well as study Japanese language. Students on the Humanities and Social Science Track take coursework in Asian studies. Students on the Natural Science Track perform laboratory work in a research institute at Kyushu University, according to their area of study.

Students accepted to these programs may apply for Kyushu University's merit-based scholarships.

**Rice University–Swarthmore Exchange Program.** An exchange program between Rice and Swarthmore College allows qualified Rice students to spend one or two semester(s) of their sophomore, junior, or senior year on Swarthmore's wooded campus near Philadelphia. This nonsectarian coed college with ties to the Society of Friends (Quakers) has academic standards similar to those at Rice. Students who enroll at Swarthmore in its normal program of 4 courses receive 16 semester hours of transfer credit toward their Rice degree. Each student pays tuition, room and board to his or her home school. Rice students apply in January by submitting a letter of application and two supporting letters from faculty members.

**Sea Education Association.** Rice's affiliation with Sea Education Association enables students to spend a semester concentrating their studies on deepwater oceanography. Half the time is spent in laboratories at Woods Hole, Massachusetts, and the other half aboard a sailing vessel in the Caribbean conducting research. Another option, Maritime Semester, lets students study the development of maritime cultures and commerce in New England and Canada while sailing off the North American coast.

**Sweet Briar Junior Year in France Program.** Established in 1948, the Sweet Briar Junior Year in France Program enables college students in the U.S. and Canada to spend a semester or year studying at four universities and other institutions of higher education in Paris. While some participants are French majors, many others specialize in such areas as art and art history, comparative literature, government, history, international relations, mathematics, music, philosophy, political science, religion, and theater arts. Following a four-week orientation period in Tours, students are encouraged to experience French culture by living with families while studying in Paris.

**Syracuse University Division of International Programs Abroad (DIPA).** DIPA operates academic centers in England, France, Hong Kong, Italy, Spain, and Zimbabwe. Each center has close ties to local universities, allowing students to design integrated programs of study appropriate to their academic and language abilities.

Classes at the centers are small and are taught by distinguished local faculty and professionals. There are no language prerequisites, as options are available for every language level—from beginner to advanced—and language study is required at all levels. Students can elect to take courses at DIPA centers taught in English or the in the host country language; intermediate and advanced language students have the further option to combine classes offered at the center with study at an affiliated university. DIPA offers a broad curriculum that covers arts and sciences, visual and performing arts, architecture, and communications and includes intensive on-site lectures and seminars.

**University of East Anglia.** This British university, located just outside of Norwich, is known worldwide for excellence in creative writing. Rice students studying abroad at UEA have access to courses in prose fiction, drama, and poetry writing, as well as special access to UEA's Visiting Writers program. Recent contributors to the program have included A.S. Byatt, Germaine Greer, Andrew Davies, and Doris Lessing. In addition to creative writing, EAU has particularly fine programs in history, art history, environmental science, and sociology.

## Academic Regulations

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All undergraduate students are subject to the academic regulations of the university. Students are responsible for making certain they meet all departmental and university requirements and academic deadlines. The Committee on Examinations and Standing administers the rules described below. Under unusual circumstances, students may submit a written petition requesting special consideration to the committee. Students should address all correspondence to the committee in care of the vice president for student affairs.

### Registration

Currently enrolled students preregister in April for the fall semester and in November for the spring semester. They complete registration at the beginning of each semester. Entering students complete their registration during Orientation Week before classes begin in August. To be properly registered, new students must complete, sign, and return a matriculation card. New students may not register or attend classes until they return a properly completed health data form and meet immunization and TB screening requirements. Immunizations required for admission are diphtheria/tetanus, measles, rubella, and mumps, with immunizations against hepatitis B and chicken pox recommended. The Mantoux tuberculin skin test is also required. A late fee of \$30 is charged for failure to submit a fully completed health data form by the required date. Each year, the Office of the Registrar publishes the specific deadlines for the semesters of that year.

Unless students elect a special payment plan, they must pay all tuition and fees for the fall semester by the end of the second week in August and for the spring semester by the end of the first week in January.

Students who do not register and who fail to request from the registrar an extension of the deadline in the Academic Calendar (pages vii–ix) are considered withdrawn from the university by default. To be readmitted, students must be in good standing and must pay a late registration fee of \$90.

After the fourth week of classes, students may be readmitted by the vice president for enrollment *only* for good reason and with the approval of the Committee on Examinations and Standing or the vice president for student affairs.



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**Drop/Add.** During the first two weeks of the semester, students may add courses to their registration without penalty with appropriate adviser's approval. During the first four weeks, students may drop courses without penalty with appropriate adviser's approval. After the second week of the semester, the following conditions apply for adds and drops:

**Undergraduate students in their first semester at Rice:**

- Must obtain instructor's permission and the adviser's approval to add a course between the second and the end of the fourth week of classes
- May not add courses after the fourth week of classes
- May drop courses up to the last day of classes

**All other students:**

- Must obtain instructor's permission and the adviser's approval to add a course between the second and the end of the fourth week of classes
  - May not add courses after the fourth week of classes
  - May not drop courses after the end of the 10th week of classes, except with the approval of the Committee on Examinations and Standing (a \$30 fee is assessed for courses dropped after the 10th week by non-first-semester students)
- Students may not drop courses where the Honor Council has ruled a loss of credit.

**Schedule of add fees:**

Week 3	\$10	Week 7	\$30
Week 4	\$10	Week 8	\$30
Week 5	\$30	Week 9	\$30
Week 6	\$30	Week 10	\$30

**Schedule of drop fees:**

Week 3	\$0	Week 7	\$10
Week 4	\$0	Week 8	\$10
Week 5	\$10	Week 9	\$10
Week 6	\$10	Week 10	\$10

*Note to the above:* weeks are defined as academic instruction; thus, spring breaks are not included in this calculation.

A \$30 fee is levied for each add or drop after the 10th week of classes.

**Course Load.** Students at Rice normally enroll for 15 to 17 semester hours each semester. For most students, this allows them to complete the requirements for graduation in 8 semesters. Students must secure permission in writing from the vice president for student affairs before registering for courses, if they want to:

- Register for more than 20 credits
- Register or drop below 12 credits
- Register concurrently at another university

No student may receive credit for more than 20 credits in a semester, including courses taken elsewhere, without this prior written approval.

Students should also be aware that the registrar's office must report a student's part-time status to various groups, such as loan agencies, scholarship foundations, insurance companies, etc. It is in the student's best interest to determine if he or she will be affected in any way by part-time status.

Students may not register for more than 1 course at the same hour unless they receive permission from the instructors involved.

### **Declaring Departmental Majors**

Students normally designate a major before preregistration for the junior year and will not be permitted to register for the fall semester of the junior year without having declared a major. To assist students with this selection, Majors Day, an event at which departments and preprofessional offices provide information about their programs, is held each spring semester. Once a student declares a major, the department or title of the major is then noted on the student's transcript, and a faculty adviser in the major department is assigned. Introductory courses taken before formal designation of a major may be counted in fulfilling the major requirements.

In order to receive a bachelor's degree, a student must complete the requirements for at least one major. Students declare their major using a form provided by the registrar. The department chair or designee must sign the form acknowledging the declaration. It is expected that the department will counsel the student about the requirements that must be met and the likelihood the student will be able to meet them. If the department believes a student is not well prepared for success in its major, it may express its reservations on the form. No department or program may, however, refuse to admit an undergraduate as a major, with the exception of the School of Architecture and the Shepherd School of Music or in the case of limitations of resources. In such cases, departments must publish criteria they will use to limit the number of majors together with their major requirements.

Although students normally declare a major by the time of preregistration for the spring semester of their sophomore year, they are always free to change departmental majors in the junior or senior year. However, such a change may entail one or more additional semesters at the university. Area majors are an exception to this rule and must be declared by the fourth semester prior to graduation (see Area Majors below). Students and their advisers should regularly review progress toward their degrees.

For information on the specific requirements for any departmental major, students should consult the departmental listings and seek the advice of a faculty member in the department.

### **Area Majors**

Students are usually the ones to initiate an area major, working it out in conjunction with advisers from the Office of Academic Advising and with faculty advisers from each of the departments involved. After designing a comprehensive and substantial course of study and deciding on an appropriate title, all parties sign off on the plan. The chairs of the involved departments and the Committee on the Undergraduate Curriculum determines final approval. At that point, the Office of Academic Advising officially certifies the approved plan to the registrar and goes on to oversee the major on behalf of the faculty advisers. Any change in the proposed requirements requires the approval of both the faculty advisers and the Committee on the Undergraduate Curriculum.

Interested students who are unsure which departments to approach should check with the Office of Academic Advising during their sophomore year. Students may not propose an area major if they are within three semesters of graduation unless the Committee on Examinations and Standing rules that exceptional circumstances warrant this action. Under no circumstances may students declare an area major in their final semester before graduation.

### **Second Four-Year Bachelor's Degree**

Currently enrolled undergraduates, Rice graduates with a bachelor's degree, and graduates from other universities with a bachelor's degree have the option of earning a *second* four-year bachelor's degree at Rice in a different discipline. This degree must be a different bachelor's degree from the one already held; for example, the holder of a B.A.

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degree may pursue course work leading to the B.S. or B.Mus. degree. Rice students should note that they can apply courses they completed at Rice as Class III students to the second degree only with the approval of the major department for that degree. (Class III students are students who already have college degrees and are taking courses for credit outside of a Rice degree program.)

**Students Already Enrolled at Rice.** To earn a second four-year bachelor's degree, currently enrolled undergraduates who have not yet completed their first bachelor's degree must:

- Be accepted for the second major by the major department
- Fulfill all requirements for the second degree
- Complete at least 30 additional semester hours at Rice beyond the hours required for their first degree (these hours are applied to the second degree)

Students seeking admission to this program should apply to the registrar. The application should include a written statement identifying both proposed majors and specifying an approved course program for each. It should also contain a statement from the chair or undergraduate adviser of each department involved, indicating that the proposed course program satisfies all major degree requirements.

**Students with a Bachelor's Degree from Rice.** Rice graduates who wish to earn a different four-year bachelor's degree must:

- Be accepted for the major by the major department
- Fulfill all requirements for the second degree
- Complete at least 30 additional semester hours at Rice beyond their first bachelor's degree (these hours are applied to the second degree)
- Attend Rice full time for at least two semesters during the fall and/or spring terms beyond their first bachelor's degree

The entire undergraduate record for these students continues cumulatively. Those seeking admission to this program should apply to the registrar. The application should include a written statement specifying the proposed major and course program for the second degree, a supporting letter from the chair of the major department, and an explanation of the student's reasons for seeking a second degree.

**Students with a Bachelor's Degree from Another School.** Other graduates who wish to earn a four-year bachelor's degree in a different major from Rice must:

- Be accepted for the major by the major department
- Fulfill all requirements for the second degree
- Complete at least 60 semester hours at Rice (these hours are applied to their Rice degree)
- Attend Rice full time for at least four fall and/or spring semesters

Interested students should apply for admission through the Office of Admission, following procedures and meeting criteria similar to that for transfer applicants (see page 46). A complete application file includes the \$35 application fee, official transcripts of all undergraduate and graduate work, two letters of recommendation from the most recent college attended, and standardized test scores (the SAT, SAT I, or ACT).

**Financial Aid and Housing.** Students seeking information about financial aid available to participants in the second degree program should contact the Office of Student Financial Services. Students admitted to the second degree program may request assignment to a college, but they will have lower priority for on-campus housing than students enrolled for a first four-year bachelor's program. This means that housing will probably not be available.

### **Honors Programs**

To enroll in the two-semester **Rice Undergraduate Scholars Program**, students register for HONS 470–471 Proposal Development and Research. This program is for juniors and seniors in all disciplines who are considering graduate study and an academic career after graduation. Students enroll in the program plan and execute independent research under the supervision of a sponsoring faculty member (they may apply for funding to cover expenses related to their projects). They meet once a week to discuss each other's work and to hear a range of presentations on life in academia. Students may apply in the spring of each year. For more information, contact the program's faculty co-director, James L. Kinsey, in the chemistry department.

Individual departments may offer undergraduates the option of **honors program** enrollment. These programs enable students to receive advanced training or to deepen their understanding of a given discipline through an intensive program of independent supervised research. Customary procedure is for students to submit a proposed project to their department's Undergraduate Committee, which helps them rework it, as needed, into a substantial but feasible proposal. Once accepted, students are assigned a faculty adviser to guide their research. The project concludes in an honors thesis, which the adviser and two readers evaluate, and an oral examination. Departments also use honors programs to formally recognize students who have shown outstanding work through their individual projects. Acceptance into a departmental honors program is at the discretion of the faculty. For specific requirements and procedures, students should contact the individual departments.

### **Transfer Credit**

Courses taken at another college or university that are appropriate to the Rice curriculum may be approved for transfer credit toward a Rice undergraduate degree. This includes credit for summer school courses not taken at Rice. Credit is normally given for courses whose content makes them equivalent to courses that are or could be offered at Rice. Students must have taken the course at an academic institution accredited by a regional accrediting agency and must have earned a grade of C- or better. Students may not transfer courses taken pass/fail or on a similar basis at other institutions.

The registrar, in conjunction with the academic departments, determines whether courses are appropriate for transfer to Rice. Individual departments may place additional restrictions on particular courses and/or institutions. No more than 14 semester hours of transfer credit taken in summer schools other than Rice may be applied to any Rice degree. Similarly, various majors and degree programs may limit the amount of transfer credit that students may apply to them.

Because of these restrictions, students are strongly advised to seek prior approval from the registrar before taking courses elsewhere. For courses in a student's major or for other highly specialized courses, the registrar may require that the student secure approval from the major department. Without prior approval, students cannot be certain that credit taken at another institution will be transferred.

If approved, the equivalent Rice course is entered on the student's record *after* the registrar receives an official transcript from the other college or university. Credit is generally determined on a pro rata basis. No grade is entered, and transferred courses have no effect on a student's Rice grade point average. However, all requirements satisfied by the equivalent Rice course are satisfied by the transferred course.

### Excused Absences

Students are expected to be in attendance at all of the classes for which they are registered during the entire course of the academic semester for which they are enrolled. The university understands, however, that students participating in university-sponsored extracurricular activities may, on rare occasions, need to miss a class session. As a matter of course, students should inform their instructors in advance of absences resulting from participation in university-sponsored activities, and faculty will normally give a reasonable opportunity to make up work missed on such occasions. Absences for activities other than university-sponsored events may also be negotiated on an informal basis between the student and the faculty member. Alternatively, absences may be formally excused on a case-by-case basis if a petition explaining the nature of the event, accompanied by suitable documentation, is submitted to the Committee on Examinations and Standing at least two weeks before the event.

### Final Examinations

Most courses include final examinations, but the decision to give a final exam as a required part of the course rests with the instructor and the department. All tests and examinations are conducted under the honor system (see page 7).

Examinations are considered final examinations when they:

- Cover more than the material learned since the last test, or
- Are the only exam in the course, or
- Require comprehensive knowledge of the entire course

Such exams may be given only during the final examination period.

Final examinations are normally three hours long. When instructors, for exceptional reasons, wish to give a longer examination, they schedule it as a take-home exam; even then, they may not exceed five hours. The “due date” for all take-home finals is the end of the final examination period.

The Committee on Examinations and Standing recommends that hour-long exams not be given in the final week of classes in those courses in which a final is given.

University-sponsored events at which student attendance is required may be scheduled in or outside of Houston during the period from Monday through Saturday during the last week of classes, so long as no more than one day of classes and one night would be spent out of Houston from the previous Sunday night through Friday afternoon. Events scheduled on Saturday may involve travel on Friday evening and on Sunday. However, no events may be scheduled on Sunday and thereafter until the conclusion of the final examination period. Exceptions may be authorized only by the Committee on Examinations and Standing.

**Grades** (See also Faculty Grading Guidelines on pages 7–8.)

**The Pass/Fail Option.** Undergraduates may register for courses on a pass/fail basis. Such students:

- May not take more than 1 course as pass/fail per semester for each full year of residence (students studying in off-campus programs through Rice are considered to be in residence for the purpose of this rule)
- May not take more than 4 courses total as pass/fail (even if they are in a five-year degree program)
- May not take more than a total of 14 semester hours total as pass/fail
- May register for only 1 course as pass/fail in a semester
- May not take as pass/fail those courses specifically required for the major or courses falling within the major department or major area. If students take such courses pass/fail, the registrar will automatically replace the P with the grade earned

- Must file the proper form for a course to be taken pass/fail no later than the posted deadline, usually the end of the 10th week of the semester (the Committee on Examinations and Standing rarely approves conversion to a pass/fail designation after that deadline)

Students may convert a pass/fail course to a graded course by filing the proper form with the registrar. The deadline is by the end of the fifth week of the following semester. Because they have the option of changing to a grade designation later, students should consider registering a course as pass/fail early in the semester.

Students should be aware that while a grade of P does not affect their grade point average, a grade of F is counted as a failure and is included into their GPA. Students who take a course during the Rice summer session as pass/fail should also be aware that this counts toward their allowable total of 4 courses.

**Grade Symbols.** Instructors are required to report a grade for all students (except auditors) whose names appear on the class list. They grade their students using the following conventional symbols: **A, B, C, D,** and **F.** Students successfully completing a course pass/fail receive a **P,** while failure to complete the course successfully is indicated by an **F.**

Students may repeat courses previously failed, but the record of the first attempt (and grade) remains on the transcript, and both grades are included in grade point average calculations. If students repeat courses previously passed, credit is awarded only once unless the course description states that students may repeat it for additional credit. In the latter case, each grade appears on the permanent record and is included in the grade point average.

**Grade Designations.** Under certain circumstances, special designations accompany the student's grade. These designations do not affect the grade point average. For students who receive a designation of "incomplete" or "other," the grade reflects a calculation that gives zero credit for work not completed. It does not become part of the student's record (except as discussed below). For students who receive a W, indicating withdrawal from the university within the last five weeks of classes, the grade is based on the performance of the student up to the time of withdrawal. It does not appear on the student's record and is used solely in determining the student's eligibility for readmission. The special designations include the following:

**INC ("Incomplete")**—Instructors report this designation to the registrar when a student fails to complete a course because of verified illness or other circumstances beyond the student's control that occur during the semester. Students must complete the work, and instructors must submit a revised grade, by the end of the fifth week of the next semester; otherwise, the registrar's office records the grade originally submitted. Students with an "incomplete" must be certain that tests, papers, and other materials affecting their grade or essential to completing a course requirement are delivered *by hand* to the appropriate professor or office. Loss or lateness because of mail service is not an acceptable excuse for failing to meet academic deadlines. A student who receives two or more "incompletes" in a semester may not enroll in the next semester for more than 14 semester hours. Students should also be aware that they may be placed on probation or suspension when the "incomplete" is changed to a grade, either by an instructor or by default.

**## ("Other")**—Instructors report this designation to the registrar when a student fails to appear for the final examination after completing all the other work for the course. Students must resolve the matter, and instructors must submit a revised grade, by the end of the first week of the second semester or by the end of the fourth week after commencement, whichever is applicable. If the registrar's office does not receive

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a revised grade, the original grade submitted is recorded. A designation of “other” is also used if an accusation has been made to the Honor Council. As noted above, students should be aware that they may go on probation or suspension when the “other” is changed to a grade, either by an instructor or by default.

**W (“Withdraw”)**—This designation appears for each course in which students are enrolled at the time of their withdrawal from the university. Courses dropped by students before the “late drop” deadline are removed entirely from the transcript. Courses dropped, with the approval of the Committee on Examinations and Standing, after the deadline receive a W. When requests for late drops are denied by the committee, the registrar records the submitted grade. See Voluntary Withdrawal and Readmission under Withdrawals and Leaves (pages 38–39) for rules concerning withdrawal in the last five weeks of classes.

**NG (“No Grade”)**—This designation indicates that the instructor failed to report a grade. Instructors are responsible for resolving this situation as quickly as possible.

**NC (“No Credit”)**—This designation signals that no credit was granted for the course. It is only used for people auditing the course.

**Grade Points.** To compute grade point averages, letter grades are numbered as follows:

<i>Grade</i>	<i>Grade Points</i>
A	4.00
B	3.00
C	2.00
D	1.00
F	0.00

Instructors may attach plus and minus signs to every grade except F. In those cases, one-third of a grade point is added or subtracted, respectively. It is general university grading practice to give pluses and minuses. The Committee on Examinations and Standing has drawn up guidelines on grading for the information of faculty and students.

**Grade Point Averages.** Grade point averages are calculated as follows. For each course, the credit attempted in semester hours and the points for the grade earned are multiplied. Then these products (one for each course) are added together, and the sum is divided by the total credit attempted. Grade point averages are reported each semester on the student’s grade report and appear on unofficial transcripts. However, grade point averages are not included on official transcripts nor, like class ranks, are they reported to any external agency.

**President’s Honor Roll.** This honor roll, published each semester, recognizes outstanding students. To be eligible, students must have earned grades in a total of 12 or more semester hours without receiving a grade of F. (Pass/Fail courses may not be counted.) Approximately 30 percent of the top undergraduates receive recognition each semester. While undergraduates enrolled in a four-year bachelor’s degree program are always eligible for the President’s Honor Roll, students enrolled in five-year bachelor’s or master’s programs are eligible only during their first 8 semesters.

### Academic Discipline and Other Disciplinary Matters

**Academic Probation.** Students are placed on academic probation at the end of any semester if:

- Their grade point average for that semester is less than 1.67
- Their cumulative grade point average is less than 1.67 (this requirement is waived if the grade point average for that semester is at least 2.00)

The period of probation extends to the end of the next semester in which the student is enrolled. Students on probation (academic or disciplinary) may not be candidates for, or hold, any elected or appointed office, nor are they allowed to enroll in more than 17 semester hours.

**Academic Suspension.** Students are suspended from the university at the end of any semester if they:

- Earn grades that will place them on academic probation a third time
- Have a grade point average for the semester that is less than 1.00 (exceptions are made for students completing their first semester at Rice)

Students readmitted after a period of suspension will be suspended again if, in any succeeding semester, they fail to meet at least one of the following requirements:

- A cumulative and semester grade point average of at least 1.67
- A semester average of at least 2.00

The first suspension period is normally one semester; the second suspension period is at least two semesters. Students are not readmitted after a third suspension.

Students who are going to be suspended for academic performance are notified by the registrar after all final grades have been received by the faculty and posted to their record. Suspension is lifted the first day of class of the semester when the student returns to the university. When students serve the nominal term of suspension but do not intend to return to Rice, suspension is lifted after permission from the Committee on Examinations and Standing is granted.

For students facing a first or second academic suspension who verify with their department that they will complete their degree requirements in one semester if allowed to return, may have their suspension reduced to probation. Students may invoke this ruling only once for a given academic degree plan.

Students who graduate at the end of a semester under academic circumstances that would normally place them on probation or suspension will not have the terms “academic probation” or “suspension” placed on their transcript for that semester.

**Disciplinary Probation and Suspension.** The assistant dean of student judicial programs may place students on probation or suspension for an honor system violation or for other disciplinary reasons. Students on disciplinary suspension (including for an honor system violation) may not receive their degree even if they have met all academic requirements for graduation. They must leave the university within 48 hours of being informed of the dean’s decision, though in cases of unusual hardship, the college master and assistant dean of student judicial programs may extend the deadline to one week. Any tuition refund will be prorated from the official date of suspension, which is determined by the registrar. While on disciplinary suspension, students may not run for, or hold, any elective or appointed office in any official Rice organization, nor may they serve as an Orientation Week adviser once they return to the university. Participation in student activities on and off campus and use of Rice facilities, including the student center, the colleges, the playing fields, the gym, and the computer labs, are limited to *enrolled* students.

**Readmission After Suspension.** Students seeking readmission after **academic suspension** should address a letter of petition to the Committee on Examinations and Standing, which must receive it at least one month before the beginning of classes. The petition should include two supporting letters from persons for whom the student has worked during the suspension period as a student or an employee. If the problems causing the previous difficulty appear to be resolved, the student generally is readmitted. Students returning from a second suspension must submit an academic program approved by the



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Office of Academic Advising before they are readmitted. These students must also maintain regular contact with that office throughout the semester. In some instances, the committee may postpone approval of readmission or rule that suspension is permanent. Under those circumstances, students desiring special consideration with regard to readmission should petition the committee in writing.

Students seeking readmission after leaving the university due to **disciplinary or other nonacademic action** should submit a petition in writing for review by the assistant dean of student judicial programs.

**Rice Summer School.** Although it may do so at its discretion, the Committee on Examinations and Standing does not normally place on probation or suspension students who perform poorly in the Rice Summer School. Students should be aware, however, that Rice Summer School grades are included in their grade point averages.

### Withdrawals and Leaves

**Voluntary Withdrawal and Readmission.** Students may withdraw voluntarily from the university at any time during the semester up until the last day of classes. If they are in good academic standing at the time of their withdrawal, students are normally readmitted after they submit a written application to the Committee on Examinations and Standing. If students withdraw for major medical or psychological/psychiatric reasons, however, they must meet the readmission conditions for an involuntary withdrawal (see below).

Students wishing to withdraw should inform their college master in person and give written notification to the vice president for student affairs, who notifies other offices of the university as necessary. If students withdraw within five weeks of the last day of classes, the committee takes into account their grades (which reflect their performance up to the day of withdrawal) when ruling on their readmission. Students whose grades would have led to suspension had they not withdrawn are treated, for purposes of readmission, as if they had been suspended. Such students must meet the requirements for readmission under academic suspension (see page 37).

Students who fail to give notice of withdrawal should expect to receive failing grades.

**Involuntary Withdrawal.** The university may insist on a student's involuntary withdrawal if, in the judgment of the vice president for student affairs, the student:

- Poses a threat to the lives or safety of him/herself or other members of the Rice community
- Has a medical or a psychological problem that cannot be properly treated in the university setting
- Has a medical condition or demonstrates behavior that seriously interferes with the education of other members of the Rice community

Students should submit written petitions for readmission after involuntary withdrawal to the vice president for student affairs, providing evidence that they have resolved the problems leading to their withdrawal. Some cases may require an interview with the director of the Rice Counseling Center, with the director of Student Health Services, or with their designees.

**Unauthorized Withdrawal.** Students who leave the university without first obtaining permission to withdraw are considered to have resigned. Although students who resign are not normally considered for readmission, they may petition first the Committee on Examinations and Standing, then the vice president of student affairs. Withdrawal without permission is noted on the transcript, but readmitted students may petition to have this notation expunged from their record by following the procedures described in the Code of Student Conduct.

**Leave of Absence.** Students may request a leave of absence from the university by applying in writing to the vice president for student affairs at any time before the first day of classes in the semester for which they are requesting leave. A leave of absence taken after the first day of classes is considered a voluntary withdrawal.

To gain readmission following an approved leave of absence of not more than four semesters, students need only notify the vice president for student affairs at least one month before the beginning of the semester that they intend to end their leave. After a leave of more than four semesters, they should apply in writing to the Committee on Examinations and Standing as if the leave were a voluntary withdrawal (see page 38).

Approval of a leave of absence is always contingent on the student's satisfactory completion of course work in the semester preceding the leave. Students performing poorly may have their approved leave converted to suspension.

**Approved Leave to Study Abroad.** Students wishing to take a leave of absence to study abroad and who intend to transfer credit back to Rice must complete an Approved Leave for Study Abroad form and a transfer credit form (including required signatures). Forms are available from, and should be returned to, the Office of International Education, Ley Student Center. This approval process takes the place of the regular request for a leave of absence (see above). At the end of their foreign study and 30 days before classes begin at Rice, students must notify the director of international education, in writing, of their intention to either return to Rice or take a regular leave of absence.

### **Applicable Academic Regulations**

Students enrolled in four- (or five-) year bachelor's programs may decide whether to operate under the academic regulations in effect when they first registered at Rice or those in effect when they graduate. If they graduate more than seven (or eight) years after their initial registration, they must operate under the regulations in effect at the time of their last readmission. Also, departments may review courses completed in a major more than seven (or eight) years prior to the student's anticipated graduation. If the department concludes that a course no longer satisfies the requirements of the major, it is not credited toward the major program, although it remains on the student's record.

Departmental major requirements may vary from year to year during the period between a student's matriculation and graduation. The department may, at its discretion, make any of these variations available to a student for completion of the major requirements. If a new degree program or major is created during the student's time at Rice, the new program will be available to a student as if the program appeared in the General Announcements at the time of matriculation.

### **Name Changes**

In order to comply with a number of government agencies reporting requirements, the university must record the name of each student who is a U.S. citizen as the student's name appears on his or her Social Security card. Students who need to change their names on Rice University records and who are U.S. citizens must notify the Office of the Registrar and present a Social Security card, marriage license, divorce decree, or court order and picture identification when submitting the form. After the change is implemented, the name on the Rice University transcript will read as printed on the supporting document(s).

### **Change in Enrollment**

The academic calendar lists deadlines for dropping or adding a class or section. This schedule is binding for all students. Adding or dropping a course, including transferring from one section to another or changing credit status in a course must be

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accomplished through completion of the appropriate forms and submission to the Office of the Registrar.

### **Transcript Policies**

Transcripts are issued only at the request of the student. Transcript requests should be made at least three working days prior to the desired date of issue. A \$5 fee per transcript must be received before a transcript is issued.

Transcripts that have been presented for admission or evaluation of credit become a part of the student's permanent record and are not reissued. Transcripts from other institutions, if needed, must be sent to Rice University directly from the original issuing institution.

### **Student Records**

Rice University assures the confidentiality of student educational records in accordance with state and federal laws, including the Family Educational Rights and Privacy Act. Student academic records are maintained primarily in the Office of the Registrar and in the academic department of the student's major, as well as various other offices around campus. All students have the right to review their records to determine their content and accuracy, to consent to disclosures of personally identifiable information as defined by law, and to file complaints with the Department of Education. Parents of dependent students, as defined by the Internal Revenue Code, who give evidence of the dependent status, have the same rights..

### **Release of Student Information from Educational Records**

The disclosure or publication of student information is governed by policies of Rice University and the Family Educational Rights and Privacy Act.

A student's consent is required for the disclosure or publication of any informational which is a) personally identifiable and b) a part of the educational record. However, certain exceptions to this general rule, both in types of information which can be disclosed and in access to that information, are allowed by the regulations of the Family Educational Rights and Privacy Act. Rice may allow access to personally identifiable information without a student's prior consent to its faculty or staff who legitimately require this information to perform their instructional, supervisory, advisory, or administrative duties.

In accordance with the law, a student's prior consent is not required for disclosure of portions of the educational record defined by the institution as directory information. The following directory information may be released by the university:

1. Name, local and permanent address, and telephone number(s);
2. Date and place of birth and sex;
3. Classification and major and minor fields of study;
4. Participation in officially recognized activities and sports;
5. Weight and height of members of athletic teams;
6. Dates of attendance, degrees and awards received;
7. The most recent previous educational agency or institution attended by the student; and
8. Photographic image.

The information above, designated by the university as directory information, may be released or published by the university without a student's prior written consent unless exception is made in writing by the student or the parents of a dependent student. Students who prefer to avoid access to or release of directory information must notify the registrar in writing prior to the end of the second week of fall classes, and the university will withhold access to, or release of, directory information until further written instruction is received.

Students have a right to challenge the accuracy of their educational records and may file written requests to amend these records. The Office of the Registrar should be contacted for further information regarding the procedure to follow for questions or problems.

For complete information regarding the policies outlined above, please contact:

**Rice University Registrar**  
Rice University  
Office of the Registrar – MS 57  
6100 Main Street  
Houston, TX 77005-1892  
Email: reg@rice.edu

**Veterans Information**

The Office of Veterans Affairs assists all veterans and their dependents who wish to receive VA educational benefits. The office also provides personal counseling, fee deferments, tutorial assistance, and work-study jobs.

Veterans who are planning to attend the university should contact the Office of Veterans Affairs at least two months prior to the date of entry. Such time is required to expedite the processing of paperwork for educational allowances from the Veterans Administration.

**Training Status**

Full Time ..... 12 Credits            1/2 Time ..... 6 Credits  
3/4 Time ..... 9 Credits            Less than 1/2 Time ..... 5 Credits

For rate of monthly payment of educational allowances for veterans and dependents, please contact Office of Veterans Affairs.

For additional informational regarding other Veterans Educational Programs contact the Office of the Registrar 713-348-4999 or reg@rice.edu.

**Application for Graduation**

All students must complete an Application for Graduation Form available in the Office of the Registrar. This form is required for all students who plan to complete their degree requirements at the end of the fall or spring semester.

**Academic Advising**

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Rice University is dedicated to providing the information, advising, resources, and support needed for our students to set goals for academic achievement and to design plans to succeed in reaching those goals. Rice is committed to a long tradition of academic advising by the faculty, primarily through the colleges and the departments and with the support of the Office of Academic Advising. Rice is further committed to providing academic assistance to students who need tutoring in difficult classes.

Academic advising for most new students at Rice occurs primarily in the residential colleges, provided by faculty associates. New students are assigned a divisional adviser based on their general areas of academic interest or proposed majors. There are four major undergraduate divisions—humanities, social sciences, natural sciences, and engineering. Architecture and music majors have advisers within those schools. Until a major is declared, the divisional adviser must approve registration and add/drop forms.

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Students can designate a major at any time or change majors at any time (prior to their final semester before graduation) by notifying the Office of the Registrar. By the spring semester of the sophomore year, each student must declare their major. Once a major is declared, the primary source of academic advice is a faculty member who is a designated major adviser in the department or program. All students are strongly encouraged to consult with major advisers at any time prior to declaring the major.

The Office of Academic Advising, located in the Ley Student Center, is a source of advice for all students. In addition to providing support, resources, and training for divisional and major advising, the Office of Academic Advising provides guidance to students planning careers in the health professions and law, to students planning to attend graduate school, and to any student needing general academic advice.

### **The Rice Tutoring Program**

Through the Office of Academic Advising, every student at Rice is entitled to free tutoring assistance, both individually and in small groups, on a limited basis. Details of the Rice Tutoring Program are available from the Office of Academic Advising.

## **Summer School for College Students**

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Rice Summer School for College Students, administered by the School of Continuing Studies, offers courses for credit to Rice students, visiting undergraduates, graduate students, and Class III students (see page 79); taking 6 to 8 semester hours in one session is considered a full load. Interested students should complete the application form found on the summer school website at <http://scs.rice.edu/summercredit>. Admission is automatic for any Rice undergraduate or graduate student in good standing. Visiting students must send official transcripts (mailed directly from their universities and colleges to the School of Continuing Studies) as well as the completed application. Acceptance in the Rice Summer School carries no implications for regular admission to Rice.

All applicants, including Rice students, should submit their applications to the Rice Summer School Office with the application fee and a tuition deposit. The remaining tuition is due in full at registration before the beginning of classes. Auditors of summer school courses, who are considered visiting students, must pay full tuition and fees. Limited financial aid is available for Rice students only.

It is essential that students apply by the deadlines listed on the summer school website. Courses that do not generate enrollments sufficient to cover their costs may be canceled. Students may apply after the deadline (but before the start of classes) by paying a late fee.

For more information, including tuition and registration information, students should contact the Rice Summer School Office at 713-348-4803, via e-mail at [scsummer@rice.edu](mailto:scsummer@rice.edu) or online at <http://scs.rice.edu/summercredit/>.

## **Admission of New Students**

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From its beginning, Rice University has sought to maintain an academic program of the highest excellence for a small body of students. While the university's resources and programs have expanded over the past years, the total number of students who matriculate remains relatively small, approximately 650 students in each first-year class.

We seek students of keen intellect who will benefit from the Rice experience. Our admission process employs many different means to identify these qualities in applicants. History shows that no single gauge can adequately predict a student's preparedness for

a successful career at Rice. For example, we are cautious in the use of standardized test scores to assess student preparedness and potential. In making a decision to admit or to award financial assistance, we are careful not to ascribe too much value to any single metric, such as rank in class, grade point average, or standardized testing score.

We use a broader perspective that includes such qualitative factors as the overall strength and competitive ranking of a student's prior institution and the rigor of his or her particular course of study. Taken together with a student's test scores and academic record, these additional factors provide a sound basis to begin assessing the applicant's potential.

Beyond these objective tests of academic competence, we look for other, more subjective qualities among applicants, such as creativity, artistic talent, and leadership potential. We believe that students who possess these attributes in combination with strong academic qualifications will benefit most from a Rice education. Through their contributions and interactions with others, they will enrich the educational experience of all students. These qualities are not revealed in test scores but are manifest in the breadth of interests and the balance of activities in their lives.

Rice University seeks to create on its campus a rich learning environment in which all students will meet individuals whose life experiences and world views differ significantly from their own. We believe that an educated person is one who is at home in many different environments, at ease among people from many different cultures, and willing to test his or her views against those of others. Moreover, we recognize that in this or any university, learning about the world we live in is not by any means limited to the structured interaction between faculty and students in the classroom but also occurs through informal dialogue between students outside the classroom.

To encourage our students' fullest possible exposure to the widest possible set of experiences, Rice seeks in its admission policies to bring bright and promising students to the university from a range of socioeconomic, cultural, and geographic origins. We seek students whose parents did not attend college, as well as students from families with a well-established history of college-level education. Rice places a premium on recruitment of students who have distinguished themselves through initiatives that build bridges between different cultural, racial, and ethnic groups. In so doing, we endeavor to craft a residential community that fosters creative, intercultural interactions between students, a place where prejudices of all sorts are confronted squarely and dispelled.

In assessing how well an applicant can contribute to enlivening the learning environment at Rice, we also try to determine the relative challenges that he or she may have faced. For economically disadvantaged students, this may mean achieving a high level of scholastic distinction while holding down a job in high school. For a first-generation student, this might mean achieving high standards for academic success within an environment relatively indifferent to intellectual attainment. Or it might mean overcoming a disability to excel in sports, music, or forensics. For students who do not have particular disadvantages, we also look at whether they chose a more challenging road than the normal path through high school. This might mean an especially strenuous course of study, a prolonged and in-depth engagement in a school project, or a particularly creative and wide-ranging set of extracurricular activities.

Our admission process precludes any quick formula for admitting a given applicant or for giving preference to one particular set of qualifications without reference to the class as a whole. An inevitable consequence of this approach is that some otherwise deserving and well-qualified students will not be admitted to Rice. By selecting a wide range of matriculants of all types, the admission process seeks to enrich the learning environment at Rice and thus increase the value of a Rice education for all students.

Due to the nature of the Rice education, Rice enrolls undergraduate degree candidates on a full-time basis only. **First-year applicants, architecture applicants, and international students may apply for the fall semester only.** Other applicants may apply to enter either the fall or spring semester.

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Applicants are selected on a competitive basis in six academic divisions: architecture, engineering, humanities, music, natural sciences, and social sciences. Candidates should give careful consideration to the category under which they wish to be considered. However, once enrolled, most students are able to move freely among most divisions after consultation with their advisers. Music students must pursue the music program for at least the first year before changing divisions. The Schools of Music and Architecture maintain limited enrollments; all majors are subject to faculty approval.

Those offered admission are expected to complete the remainder of their high school courses with the same superior performance that led to their admission.

#### First-Year Applicants

There are four areas of focus generally used in evaluation of first-year candidates for admission: scholastic record as reflected by the courses chosen and the quality of academic performance, recommendations from high school, the application presentation of personal information and essays, and standardized testing (SAT I or ACT and three subjects from the SAT II).

**The High School Record.** Students must complete at least 16 college preparatory units as follows:

English	4	Laboratory science (e.g., biology,	
Social studies	2	chemistry, physics)	2
Mathematics	3	Additional credits in any of the	
A foreign language	2	categories above	3

The natural science and engineering divisions require trigonometry (precalculus) or other advanced mathematics courses and both chemistry and physics. Students may substitute a second year of chemistry or biology for physics.

Students admitted with academic deficiencies will be asked to complete the required work by taking high school or college-level courses during the summer before enrollment at Rice.

**Recommendations.** Candidates must submit evaluations from a counselor and one teacher. The necessary forms are included in the application.

**The Application.** The application provides the committee with important information on the student's background and gives the applicant an opportunity to provide statements on his or her interests, experiences, and goals. Both the Rice application and the Common Application are accepted. *The application fee is \$35.* Students for whom this fee creates a hardship may apply for a waiver. Freshman applicants should provide proof of a fee waiver for the SAT I or ACT test or eligibility for the school lunch program. In any case, a letter from the student's high school counselor is required. Financial stress created by application fees to other institutions is not considered a valid reason to grant a fee waiver.

**Standardized Testing.** The SAT I or ACT and three subject exams from the SAT II are required for admission. All applicants must submit three SAT II tests: one in writing and two others in fields related to the candidate's proposed area of study.

These exams are administered by the College Board and the American College Testing Program. Bulletins and test registration forms are available from high school counseling offices. The applicant is responsible for arranging to take the tests, and official score reports must be submitted before the student can be considered for admission. The College Board code for Rice is 6609. The ACT code is 4152.

**Personal Interview.** Although a personal interview is *not a requirement*, we *recommend* an interview for first-year applicants as an excellent opportunity to discuss the applicant's interests, needs, and questions. On-campus interviews are conducted by the admission staff and a select group of Rice senior students. Also, off-campus interviews are conducted throughout the United States by Rice alumni. Please consult the application packet or call the admission office for details.

**Music Audition.** Candidates to the Shepherd School of Music must arrange for an audition with a member of the music faculty.

**Architecture Portfolio and Interview.** Architecture applicants must submit a portfolio. An interview with a faculty member from the School of Architecture is strongly recommended.

### Decision Plans

**Early Decision Plan.** Early Decision is designed for students who have selected Rice as their first choice. Students may initiate applications to other colleges but may make a binding Early Decision application to one college only.

Early Decision applicants must complete the required standardized testing on or by the October testing dates in the senior year. All other materials should be postmarked by November 1. Admission notices will be mailed by December 15. The committee will admit, defer, or deny Early Decision applicants. Deferred applicants are considered with the Regular Decision pool, and seventh-semester grades and additional standardized test scores will then be considered.

**It is important to note that if admitted under Early Decision a candidate must withdraw all other college applications, may not submit any additional applications after accepting the offer, and must accept Rice's offer of admission by submitting a \$100 nonrefundable deposit by January 2.** An additional \$50 housing deposit is required of those desiring on-campus accommodations.

Those accepted under Early Decision may receive an estimate of need-based financial aid by registering for the College Scholarship Service (CSS) PROFILE by October 1, 2001, and sending the PROFILE packet to CSS by November 1, 2001. Register for CSS PROFILE by calling 1-800-778-6888 or by visiting their website at [www.collegeboard.com](http://www.collegeboard.com). CSS will mail you the PROFILE; complete and return it to CSS. Students may also complete the PROFILE online. The PROFILE number for Rice is 6609. Note that **official** financial aid offers may be made only after the Office of Student Financial Services has received the following documents (all of which should be completed after January 1):

- CSS PROFILE, priority date February 1
- The Free Application for Federal Student Aid (FAFSA), priority date March 1
- The student's and parents' 1040 form, priority date May 1

**Interim Decision Plan.** First-year applicants who complete their standardized testing on or before the December testing dates and who postmark all other materials by December 1 may be considered under the Interim Decision Plan. Decisions are mailed by February 10. The committee will admit, defer, or deny Interim Decision applicants. Deferred applicants are considered with the Regular Decision pool, and seventh-semester grades and additional standardized test scores will then be considered.

Interim Decision applicants who are offered admission must pay a \$100 registration deposit by May 1 to reserve a place in the incoming class. After May 1, deposits are not refundable. Those who desire a room on campus must pay an additional \$50 deposit.



**Regular Decision Plan.** Students who apply Regular Decision must postmark their materials by January 2 to receive notification by April 1. Candidates who miss the deadline must do so in full knowledge that they are in a less competitive position. Regular Decision applicants must complete their standardized tests by February.

Regular Decision applicants who are offered admission should submit a \$100 registration deposit by May 1 to reserve their places in the incoming class. After May 1, deposits are not refundable. Those who desire a room on campus must pay an additional \$50 deposit.

### **Accelerated Students**

Rice University will accept applications from students who are completing high school in less than four years. It is important to note that these students will compete with other candidates who will be completing four years of high school. Therefore, it is the candidate's responsibility to demonstrate that he or she has exhausted *all* college preparatory course work at his or her school. Further, because of the residential focus and commitment to student self-governance at Rice, candidates must also demonstrate the maturity and personal development that would allow them to participate fully and responsibly in campus life. Because of the unique circumstances surrounding the accelerated student, it is strongly recommended that these candidates have an on-campus interview with a member of the admission staff before the application deadline.

### **Transfer Students**

Students with superior records from two-year or four-year colleges or universities may apply as transfer candidates. Applicants for transfer admission must file the following with the Office of Admission:

- The written application
- Official transcripts of all high school and college work completed to date as well as courses in progress
- Two faculty recommendations
- A recommendation from the dean of students
- SAT I or ACT scores
- A \$35 application fee

Applications with the appropriate documents must be postmarked by April 1 for fall term admission and November 1 for spring term admission. Notification of the admission decision is mailed by June 1 and December 15, respectively. The criteria used in evaluating transfer applications are similar to those applied to applicants for the first-year class, except that special emphasis is given to performance at the college level. Because of the highly competitive nature of transfer admission, it is recommended that applicants have a minimum 3.20 (4.00 scale) grade point average on all college work. The SAT I or ACT must be taken by April for fall application and October for spring application. The SAT II is not required.

Students for whom the \$35 application fee creates a hardship may apply for a waiver. Transfer applicants must send a copy of the Student Aid Report that they receive after completing the Free Application for Federal Student Aid (FAFSA) along with a request for a fee waiver to the Office of Admission. Financial stress created by application fees to other institutions is not considered a valid reason to grant a fee waiver.

Transfer students must be registered in residence at Rice for at least four full semesters during the fall or spring terms and must complete no fewer than 60 semester hours before earning a Rice degree.

**Advanced Placement/International Baccalaureate/Placement Tests**

Students who score a 4 or 5 on the applicable Placement College Board examinations before matriculation at Rice are given university credit for corresponding Rice courses.

Students who earn the International Baccalaureate diploma will receive credit for individual higher-level exams for which they receive a score of 6 or 7. Students from high schools that offer International Baccalaureate courses but not the diploma will receive credit according to the same criteria.

Furthermore, during Orientation Week, entering students may take placement tests administered by various departments at Rice. On the basis of these tests, students may be advised to register for courses beyond the introductory level. In most cases, credit is not given for these tests.

**Other Students**

**Visiting Students.** Students who wish to spend a semester or a year at Rice taking courses for credit to be applied toward their undergraduate degree at another school may apply for admission as visiting students through the Office of Admission. The student's application should be accompanied by the \$35 application fee, an official high school transcript, an official transcript of college work to date, an SAT I (SAT) or ACT score, and recommendations from the dean of students and a faculty member who has taught the student within the past academic year. Visiting student applications should be postmarked by April 1 for the fall semester and November 1 for the spring semester.

Visiting students are assigned membership to one of the residential colleges during their stay and are charged the same fees as other undergraduates. In a few classes where enrollment is limited because of space or other considerations, candidates for Rice degrees have priority over visiting students.

Visiting students may apply to transfer to Rice only after having left Rice for at least one semester.

**Class III Students.** Students with Class III standing at Rice have an undergraduate or graduate degree from an accredited college or university and are taking courses at Rice for credit but not in a specific degree program. Students interested in this program should contact the Office of Graduate Studies.

**Second Degree Students.** An individual who has a bachelor's degree from another institution and desires another in a different area of focus may apply as a second degree student on a space-available basis. Students may only pursue a second degree that is different from their first degree. For example, applicants already holding a B.A. may apply only to B.S. programs, and vice versa. The application, a \$35 application fee, official transcripts of all undergraduate and graduate work, two letters of recommendation from the most recent college attended, and standardized test scores (the SAT, SAT I, or ACT) are required to complete an application file. The deadline for fall semester admission is June 1 and the deadline for spring is November 1.

Second degree applicants with a prior bachelor's degree from Rice should apply in writing to the Committee on Examinations and Standing in care of the vice president for student affairs.

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**Dual Enrollment Students.** Accelerated high school juniors and seniors who have taken all the courses in a given discipline available to them in high school may request admission to Rice for the purpose of taking one or more university-level courses as dual enrollment students. The written application, application fee of \$35, high school transcript, a teacher and a counselor recommendation from the applicant’s high school, and an SAT I or ACT score should be sent to the Office of Admission by June 1 for the fall semester or December 1 for the spring semester.

Tuition for new students is \$692 per semester hour plus a \$95 registration fee, the total not to exceed \$8,300. Tuition for returning dual enrollment students would be the rate (plus inflation) at which they first took dual enrollment courses at Rice. These charges are for the 2001–2002 school year and are subject to change in subsequent years. Financial assistance is not available for this program.

**Auditors.** Any interested person, including currently enrolled students, may audit one or more courses at Rice by securing permission of the instructor and by registering as an auditor with the registrar. The university grants no academic credit for such work. Audit credit does not appear on transcripts. Currently enrolled students may audit courses without charge. Rice alumni are charged a fee of \$250 per course per semester. All others are charged \$490 per course per semester for the privilege of auditing. Request to audit a class must be done during the first week of the semester.

## Tuition, Fees, and Expenses

Charges for tuition, fees, and room and board are billed to students each semester. Students may pay the charges in full by the due date or in installments over the course of the semester. The fall semester due date is mid-July for freshmen and mid-August for all others, and the spring semester due date is the first week of January. The following costs apply to undergraduates in the 2001–2002 school year:

<b>Tuition</b>	<b>Annual</b>	<b>Semester</b>	<b>Hour**</b>
Entering first-year and transfer students*	\$16,600	\$8,300	\$692
Students matriculating in 2000–01	\$16,500	\$8,250	\$688
Students matriculating in 1999–00	\$16,300	\$8,150	\$680
Students matriculating in 1998–99	\$15,800	\$7,900	\$659
Students matriculating in 1997–98	\$15,250	\$7,625	\$636
Students matriculating in 1996–97	\$14,500	\$7,250	\$605

\* Tuition indexed for five years

\*\* By special permission only

<b>Fees</b>	<b>Fall</b>	<b>Spring</b>	<b>Annual</b>
Student activities*	\$ 83.30		
Athletic events	\$ 95.00		
College	\$ 50.00		
Health service	\$137.50	\$137.50	
Shuttle	\$ 31.00		
<b>Total fees</b>	<b>\$396.80</b>	<b>\$137.50</b>	<b>\$534.30</b>

Newspaper fee \$ 12.00

\* Fifth-year students in professional degree programs and students working toward a second bachelor’s degree may pay a reduced student activities fee of \$12.70, which covers the Student Association, Student Organizations Activity, University Court, and Honor Council portions of the activity fee, and elect not to pay the college fee.

<b>Room and Board</b>	<b>Annual</b>	<b>Semester</b>
Room	\$ 4,200	\$2,100
Board	\$ 3,000	\$1,500
Telecommunication fee	\$ 110	\$55.00

Any undergraduate who withdraws or takes an approved leave of absence and then gains readmission to the university pays the tuition applicable at their matriculation, plus annual Consumer Price Index increases for a period not to exceed six years. Starting with fall 2001 matriculants the index period is not to exceed five years. After the index period, students pay the tuition rate applicable to the current entering class.

### **Refund of Tuition and Fees**

Students who withdraw during the first two weeks of the semester are not charged tuition or fees for that semester. Students who withdraw during the third week must pay 30 percent of the semester's tuition, receiving a 70 percent refund. The amount of the refund drops by 10 percent at the beginning of each successive week that passes before withdrawal until the ninth week, after which no refund is made. Federal regulations require a refund calculation for all students receiving Title IV funds. The length of time during which a refund must be calculated is up to 60 percent of the payment period (semester). If a student withdraws on or before the 60 percent point in time, a portion of the Title IV funds awarded to a student (Pell Grant, Federal SEOG, Federal Perkins Loan, Federal Direct Subsidized, Unsubsidized, and Federal Direct PLUS Loans, and the Texas LEAP Grant) must be returned, according to the provisions of the Higher Education Act Amendments of 1998. The calculation of the return of these funds may result in the student owing a balance to the university and/or the Department of Education.

For students withdrawing after the second week of classes in a semester, fees or special charges (see page 50) are not refunded. Similarly, students withdrawing or taking leaves of absence in the spring semester do not receive a partial refund of fees paid for the full year. Students withdrawing at any time forfeit the \$100 enrollment deposit they paid as incoming students.

Students who receive approval to enroll with a course load of fewer than 12 hours during the first nine weeks of the semester may be entitled to a tuition rebate based on the same refund schedule used for withdrawing students. Any such rebate depends on the actual date by which the registrar's office processes the relevant drop form.

Students unable to resolve with the cashier's office any request for special consideration in connection with waivers, refunds, or adjusted payments on tuition, fees, and other charges should forward their appeals to the vice president for student affairs. Resolution of waivers and refunds for room and board charges require the approval of the vice president for finance and administration.

### **Living Expenses**

Residence fees cover dining hall costs and residence maintenance. They are established each year as needs dictate. For 2001–2002, the annual room and board charge for residence in a residential college is \$7,200. This charge includes the room and all the meals eaten during the year.

**Housing.** About 65 percent of Rice undergraduates live in the on-campus residential colleges. Information about the residential colleges and room application forms accompany the notice of admission sent to each new undergraduate. Room reservations cannot be made before notification of admission. Further information on housing in the residential colleges is available from the Office of Student Affairs, and information on off-campus housing is provided by the Office of Academic Advising.

## 50 INFORMATION FOR UNDERGRADUATE STUDENTS

When they receive their residential college room assignments for the academic year to follow, students must sign a housing agreement. To reserve their space, current students must sign a housing agreement by the date established in their respective colleges but no later than April 15. New students must make a \$50 deposit before May 1. These nonrefundable deposits are applied to the following semester's room and board charges.

**Board.** Meals are served cafeteria-style and are all-you-care-to-eat. The colleges provide three meals per day Monday through Friday, breakfast and lunch on Saturday, and lunch and dinner on Sunday. Meals are not served during the Thanksgiving holiday, at the mid-year break, over the fall and spring mid-term recesses, and during spring holidays. Information on optional meal plans is available from the College Food Service (<http://food.rice.edu/index.html>).

**Payments and Refunds.** Students may pay their residence fee in installments. The exact amounts and due dates appear in the Residential Housing Agreement. Students moving out of the college for any reason receive a refund (or a credit) of the reduced balance of board charges but must still pay the full room charge for the entire academic year. Possible exceptions in the case of academic suspension, Rice-sponsored study abroad, and family emergencies are treated on a case-by-case basis.

### Special Charges

The following charges are separate from the regular fees. For charges due to late registration or course changes made after the deadlines, see Registration (page 29–30).

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Orientation Week room and board (required for all new students)	\$195
Late application fee for Class III students	\$ 60
Part-time registration	\$ 95
Orientation Week college fee (paid to the individual college)	\$140
Late registration	\$ 90

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### Health Insurance

All Rice students must have health insurance. Students may purchase insurance for the 2001–2002 school year through the university program developed for Rice students at a yearly premium of \$986 (Plan A) or \$845 (Plan B). Coverage is effective from 12:01 A.M., August 15, 2001, until 12:01 A.M., August 15, 2002. Dependent coverage is also available. Both the Cashier's Office and the Office of Student Activities have application forms and policy descriptions. Students who already have medical insurance must obtain a waiver form showing proof of insurance, sign it, and return it to the Cashier's Office by August 10 to avoid being charged automatically for insurance.

### Teacher Certification Program Fees

Students enrolling in the student teaching apprenticeship or internship plans must pay a \$170 registration fee for each semester. An additional \$25 fee (paid to the School of Continuing Studies) is due for each summer school session.

### Delinquent Accounts

No student in arrears of any financial obligation to Rice as of the last day of registration for any semester can register for classes. The university will not issue certificates of attendance, diplomas, or transcripts at any time for a student whose account is in arrears.

Students who have not made satisfactory arrangements with the cashier for payment of current charges or who have moved on campus without a proper room contract may be dismissed from the university.

### Transcripts

Transcripts are issued on written request to the registrar's office. The registrar does not issue transcripts without the consent of the individual whose record is concerned. The charge of \$5 for each copy is payable in advance. Those requesting transcripts by mail should include payment with the request.

## Financial Aid

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The financial aid programs at Rice provide assistance to meet the full costs of university attendance for all admitted students. Through grants, endowments, low-interest loans, campus work opportunities, or a combination of these programs, Rice makes every effort to provide students and families sufficient assistance to meet their educational expenses. The financial aid program receives funding from many sources. Rice uses contributions from alumni and friends to establish and maintain scholarships and loan funds. Federal and state grants and work and loan programs also provide funds. Awards are based primarily on financial need and a computed Expected Family Contribution (EFC), although there are also attractive loan opportunities for students and families who have no need.

The university determines need for first-time students by having them register for the College Scholarship Service (CSS) PROFILE, and sending the PROFILE packet to CSS. Register for CSS PROFILE by calling 1-800-778-6888 or by visiting their website at [www.collegeboard.com](http://www.collegeboard.com). CSS will mail you the PROFILE; complete and return it to CSS. Students may also complete the PROFILE online. The PROFILE number for Rice is 6609.

The university determines need for continuing students by having them submit a FAFSA and a Rice Financial Aid Application on an annual basis, by the priority date of March 1. **Note:** Continuing students are not required to complete a CSS PROFILE.

"Need" is the amount required to meet the difference between each student's total educational expenses and his or her family's resources. Parents are expected to contribute according to their financial means, taking into account income, assets, home equity, number of dependents, and other relevant factors. Students are expected to contribute as well from their own assets and earnings, including appropriate borrowing against future earnings.

The brochure *Financing Your Education* explains the assistance programs in detail. Copies are available from the Office of Admission or the Office of Student Financial Services. The university also publishes budgets that realistically summarize student expenses, including living costs at home and on or off campus, personal expenses, and travel.

### Need-Based Application Process

Rice University is a need-blind school. Applicants are admitted to the university regardless of their family's ability to pay for college. Rice will meet 100% of financial need as determined by university calculations.

Rice considers applicants for all appropriate assistance administered by the university, including grants, scholarships, loans, and work. Students receive notification of an offer once their financial aid file is complete.

## 52 INFORMATION FOR UNDERGRADUATE STUDENTS

To apply for financial assistance, first time students must submit the following:

- CSS PROFILE, priority date February 1
- The Free Application for Federal Student Aid (FAFSA), priority date March 1
- The student's and parents' 1040 form, priority date May 1

Continuing students must submit the following (priority date, March 1):

- FAFSA
- Rice Financial Aid Application

After January 1, Early Decision students will need to submit both the PROFILE and the FAFSA.

### Interim and Regular Decision

Interim and Regular Decision applicants need to register for the PROFILE by **January 1**. Submit both the FAFSA and the PROFILE to the processing centers by **February 1**, in order to ensure the aid award is included with the notification of admission.

All freshman aid applicants will also be required to submit both the student's and parent(s)' 2001 federal income tax forms by May 1, 2002.

Financial aid offers are made annually. Payment terms are specified in the Financial Aid offer letter. Because financial circumstances change from year to year, Rice conducts an annual review of need and offers need accordingly. For this reason, continuing students must complete and return the Rice University Application for Financial Aid to the university and file the FAFSA every year that they seek assistance.

The university, from time to time, may adjust its methods of computing financial need or its policies regarding the types of financial assistance that it offers so as to meet the financial needs of the largest possible number of students. Therefore, the amount and type of financial aid may change from year to year, even when the student's financial situation appears to remain relatively stable.

### Types of Financial Aid and Assistance

**Student Loan Funds.** To assist students and parents with educational financing, the Office of Student Financial Services participates in the following programs:

- **William D. Ford Federal Direct Student Loan.** These are low-interest loans made to students, attending school on at least a half time basis. Rice University makes loans, and funds are received directly from the U.S. Department of Education. Subsidized Ford loans require financial aid eligibility, but unsubsidized Ford loans are available to all students. This variable loan is capped at 8.25%.
- **William D. Ford Federal Direct Parent Loan.** The Federal Direct Parent Loan is a low-interest loan to parents or legal guardians of dependent undergraduate students. Eligibility is not based on demonstrated financial need. This variable loan is capped at 9%.
- **Federal Perkins Loan Program.** The Federal Perkins Loan Program provides long-term federal loans for U.S. citizens and permanent residents. The amounts offered vary according to financial aid eligibility. The Federal Perkins Loan is a 5% interest-free loan while the student is enrolled in school.
- **College Access Loan.** The College Access Loan (CAL) is designed to assist the student whose family experiences difficulty in meeting the Estimated Family Contribution (EFC) to qualify. To qualify, the student must be a Texas resident or a National Merit Scholarship recipient.

A few endowments for student loans have been established at Rice primarily as memorial tributes. These funds exist separately from the normal financial aid program.

Rice uses them to make emergency loans to students experiencing unexpected financial problems or showing additional need beyond regular eligibility.

All applications for these loans must be submitted to the Office of Student Financial Services.

**Student Employment Programs.** Opportunities for employment are available to students, either on or off campus, during the academic year. Students are eligible to work under the Federal Work-Study Program or the Rice University Work Program. Students interested in employment should access the Student Financial Services web page at <http://www.ruf.rice.edu/~fina/employmnet.htm>.

**Deferred Payment Plan.** Rice offers a deferred payment plan to enable families to finance students' educational costs. This plan divides each semester's charge over four installments. Applications and details are available to eligible students each semester at the time of billing. Students arrange for deferred payment through the Cashier's Office.

### Vocational Rehabilitation

The Texas Rehabilitation Commission (TRC) provides assistance in paying tuition and nonrefundable fees for students who have certain disabling conditions. Once a TRC counselor approves their vocational objectives, students affected by orthopedic deformities, emotional disorders, diabetes, epilepsy, heart problems, and other disabling conditions are eligible for assistance. The TRC offers a range of services to help handicapped students become employable. Interested students should apply to the Texas Rehabilitation Commission.

Students with visual handicaps should contact the Texas State Commission for the Blind.

### Financial Aid Policy

Undergraduates may receive a Rice University Tuition Grant and Rice endowed funds for eight semesters. However, undergraduates may receive federal and state aid beyond eight semesters, but not to exceed Rice's quantitative maximum.

**Satisfactory Progress Policy for Financial Aid Recipients.** The Higher Education Act of 1965, as amended by Congress in 1980, mandates that institutions of higher education maintain minimum standards of "satisfactory progress" for students to receive financial aid.

**Required Grade Point Average.** Students at Rice are placed on **financial aid probation** if at the end of any semester they have either of the following:

- A cumulative grade point average that is less than 1.67
- A grade point average for that semester that is less than 1.67

The period of probation extends to the end of the next semester that the student is enrolled at the university.

Except for those completing their first semester at Rice, students are **ineligible for financial aid** if at the end of any semester they earn either of the following:

- Grades that would result in financial aid probation for a third time
- A grade point average that is less than 1.00 for that semester

The period of financial aid ineligibility normally lasts at least one semester.

Students who regain financial aid eligibility will lose it again if in any succeeding semester they fail to achieve either of the following:

- A cumulative and semester grade point average of at least 1.67
- A semester grade point average of at least 2.00



Ineligibility a second time results in at least two semesters without aid. Normally students receive no further aid after a third ineligibility.

**Required Semester Hours.** Students failing to make “satisfactory progress” in course work may become ineligible for aid. Students must earn:

- At least 18 semester hours credit by the end of the first academic year
- At least 44 hours by the end of the second year
- At least 70 hours by the end of the third year
- At least 96 hours by the end of the fourth year

Students not receiving a bachelor’s degree within the 120 hours maximum allowance will need to appeal to the director of student financial services for continued financial assistance.

The academic year commences with the first day of classes of the fall semester and continues to the first day of classes the following fall. Students denied financial aid because of insufficient semester hours regain eligibility only when they complete enough credits, including incomplete courses, to make up the shortage.

**Termination of Aid and Appeal.** The Office of Student Financial Services sends written notification to students qualifying for financial assistance who have not made minimum “satisfactory progress” and whose aid therefore is being terminated. At the end of the fall semester, the notice is sent to the student’s college. At the end of the spring semester, the notice is sent to the most recent permanent address provided to the registrar by the student. In both cases, the office considers the notifications, once sent, to be delivered.

Any student ruled ineligible for financial aid due to lack of “satisfactory progress” may appeal such action to the director for student financial services. Students should send their appeals in writing to the director, who may take into account mitigating circumstances.

**Regaining Eligibility.** To regain eligibility, students must address a letter of petition to the director of student financial services, following the procedures for the readmission of suspended students; see Readmission After Suspension (pages 37–38). Suspended students readmitted by the Committee on Examinations and Standing need not petition the director of student financial services.

## Honor Societies

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Honor societies at Rice include the following:

**Phi Lambda Upsilon**—national honorary chemical society promoting high scholarship and original investigation in all branches of pure and applied chemistry (Rice chapter: 1926)

**Phi Beta Kappa**—founded in 1776 at the College of William and Mary to recognize intellectual achievement and the love of learning among students in the liberal arts and sciences (Rice chapter: March 1, 1929)

**Pi Delta Phi**—organized to interest French students in competing for high standing in scholarship (Theta chapter at Rice: May 1930)

**Society of Sigma Xi**—for the promotion of research in science (Beta of Texas chapter at Rice: March 23, 1938)

**Tau Beta Pi Association**—organized to interest engineering students in competing for high standing in scholarship (Gamma of Texas chapter at Rice: December 18, 1940)

**Delta Phi Alpha**—to promote an interest in the German language and literature (Gamma Xi chapter at Rice: April 1949)

**Sigma Delta Pi**—to promote an interest in the Spanish language and literature (Rice chapter: May 14, 1953)

**Tau Sigma Delta**—national honor society in architecture and applied arts (Tau chapter at Rice: May 7, 1961)

**Eta Kappa Nu**—founded in 1904 at the University of Illinois for electrical engineering students, to stimulate and reward scholarship as well as assist and encourage its members to grow professionally throughout their lives (Rice chapter: January 1981)

**Omicron Delta Epsilon**—to promote study in economics (Rice chapter: 1981)

**Psi Chi**—founded in 1929 at Yale University to encourage, stimulate, and maintain excellence in scholarship and to advance the science of psychology (Rice chapter: April 23, 1990)

## Undergraduate Student Life

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### Residential Colleges

All undergraduate students at Rice, whether they live on campus or not, are members of one of nine residential colleges. All colleges are coeducational.

Each college has faculty masters who live in a house next to the college. Reporting to the vice president for student affairs, the masters have overall responsibility for all aspects of student life in the college, especially for encouraging broad cultural and intellectual interests and for promoting self-discipline and effective self-government within the college. Upon agreement, the students and masters invite other members of the Rice faculty to become resident and nonresident associates of the college. Faculty associates act as advisers to the students and participate in the various activities of the college. Colleges also have nonfaculty university associates and community associates drawn from various professions in the Houston area.

Each college exists as a self-governing group of students. The elected officers and representatives are responsible to the masters and to the college membership for:

- Directing the college's cultural, social, and athletic activities
- Expenditure of college funds
- Maintaining order in the college

While uniformity among the colleges has never been sought and each college has developed its own particular interests and character, all seek to foster fellowship among their members and a mature sense of honor, responsibility, and sound judgment.

**College Assignment.** Each undergraduate, upon acceptance by the university, is designated a member of one of the colleges. Two students entering Rice for the first time may request assignment to the same college, but they may not designate which college. New students may also request membership in the same college as a close relative. Except for these cases, students have no individual choice of college.

**Room and Board.** College buildings include a dining hall and public rooms, which are available to both resident and nonresident members, and living quarters for approximately 215 students from all classes and all academic disciplines.

At present, Rice has room in its on-campus residential colleges for about 75 percent of its undergraduate students. Although most of the students who want to live in the colleges can be accommodated, demand usually exceeds the available number of rooms.

## 56 INFORMATION FOR UNDERGRADUATE STUDENTS

The university makes every effort to provide housing in the colleges for all incoming first-year students who wish to live on campus, but space cannot be guaranteed. Continuing students draw for rooms according to the priority system established in each college. No student is required to live on campus; however, those members of the colleges who live off campus are encouraged to eat in their colleges and to participate in college activities.

The College Food Service provides à la carte meals, with the exception of prepaid dinners. Its other services include:

- Assistance with special diets prescribed by a physician
- Sack lunches for students who must miss a meal due to a job conflict
- Sick trays for students when requested by the Student Health Service
- Alternate menu entrées, whenever possible, to accommodate students' religious practices

For more information on room and board, see Living Expenses (pages 49–50).

**College Courses.** One of the colleges' important activities is their sponsorship of courses and workshops open to all students. By expanding course offerings outside the traditional departments, college courses promote the academic involvement of the colleges while introducing students to interdisciplinary topics of particular interest.

Students propose college courses during the semester before they are offered. Once approved by the masters and faculty associates of the college and by the vice president for student affairs and the provost, these college courses are offered for academic credit on the same basis as departmental courses. The registrar provides a list of college courses each semester during preliminary registration.

### **Student Government**

All undergraduates are members of the Rice Student Association, which is governed through the Student Senate. The senate includes the president, two vice presidents, the secretary, the treasurer, the eight college presidents, and eight college senators.

Alleged violations of university or college rules are handled in accordance with the Code of Student Conduct. In most cases, original jurisdiction belongs to student courts. Students may appeal verdicts to the college masters or the assistant dean for student judicial programs, as appropriate with a final appeal to the vice president for student affairs. The student-staffed Honor Council conducts hearings and trials for alleged offenses against the honor system (see page 7). Rice retains ultimate authority in all matters of discipline and over all actions that affect its educational function or the safety and well-being of members of the university community.

**Award Presentations.** The Rice Student Association presents two coveted awards annually, one to a student and one to a faculty or staff member. The Rice Service Award, a memorial to Hugh Scott Cameron, first dean of students at Rice, is awarded to currently enrolled or former members of the association who have rendered distinguished service to the student body. The Mentor Recognition Award recognizes extraordinary service to the student body by a current member of the faculty or staff. A committee of faculty and students appointed by the association makes the selections.

### **Office of Student Activities**

The Office of Student Activities, located in the Rice Memorial Center cloisters, oversees the activities of various campuswide student organizations. It also handles student requests for facilities and party permits, and it coordinates leadership development programs, including the annual leadership retreat and symposium.

Principal student organizations include the following:

- Rice Student Association, the student governing body
- Rice Program Council, which sponsors various events of current interest to the student body as well as social functions
- KTRU, the student-run radio station, operating 24 hours, seven days a week, on 91.7 FM
- Student publications (e.g., *Rice Thresher*, the student newspaper; *Campanile*, the yearbook; *The Rice Undergraduate: The Annual Academic Review*, a collection of peer-reviewed student papers; and *University Blue*, a literary and visual arts publication)

A large number of student organizations address special student interests, such as the Black Student Association, the Hispanic Association for Cultural Education at Rice, the Chinese Student Association, Rice Young Democrats, and Rice Republicans. There also are numerous clubs for such sports as sailing, rugby, lacrosse, volleyball, and soccer. Other special-interest groups include a premed society, forensic society, juggling club, and vegetarian club.

Many organizations are associated with special academic and professional disciplines, such as foreign language clubs, honor societies, and student affiliates of the American Chemical Society, the American Society of Civil Engineers, and the American Society of Mechanical Engineers.

The Rice Players, an extracurricular theater group of Rice students, faculty, and staff, present at least four productions each year and welcome participation by anyone interested in any aspect of theater production or management.

Rice students also maintain affiliations with a number of religious organizations. These include, but are not limited to, the Baptist Student Union, Canterbury Association, Catholic Student Association, Christian Science Organization, Hillel Society, Lutheran Student Association, Intervarsity Christian Fellowship, and the Wesley Foundation. Many of these clubs are assisted by local clergy who form the Joint Campus Ministry.

The Office of Student Organizations on the second floor of the Ley Student Center houses mailboxes for all student organizations. There is a student organization work space in the basement of the Rice Memorial Center that has office space, storage, and computers for student organization use.

### **Community Involvement Center/Rice Student Volunteer Program**

Housed in the cloisters of the Rice Memorial Center, the Community Involvement Center works to develop a culture of service within the university by functioning as an advocate for community service, social responsibility, and an increased awareness of social and community issues. The center acts as a clearinghouse for resources and referrals involving local, national, and international community agencies and service opportunities. By making educational programs and information available, the center fosters a lifelong commitment to service among students, faculty, and staff. It also organizes alternative semester break service trips, volunteer fairs, beach cleanups, and other activities. The 10 student service organizations supported by the Community Involvement Center include Rice Habitat for Humanity, youth mentoring and tutoring programs, tutoring in English as a second language, Best Buddies, and the Rice Student Volunteer Program.

By heightening student awareness of community needs and generally raising social consciousness, the Rice Student Volunteer Program (RSVP) has organized volunteer projects for Rice students, faculty, and staff since 1985. The largest event of each semester is Outreach Day, a Saturday when approximately 500 students volunteer with more than 30 nonprofit agencies throughout the Houston area, learning how to

take thoughtful action to build a stronger, more just community. With an office in the cloisters of the Rice Memorial Center, RSVP invites each student's involvement as an officer, a college representative, a committee member, a project organizer, or an interested participant in any RSVP event.

### **Intercollegiate Speech and Debate**

Consistently ranked in the top 10 nationally, the George R. Brown Forensic Society sponsors competition in the categories of Individual Events, Lincoln–Douglas, and Parliamentary Debate. The society provides students with the chance to hone their public speaking skills and to qualify for competition both at the American Forensic Association National Individual Events Tournament and at the National Parliamentary Debate Championships. Recognizing the importance of developing strong communication skills, the society has an open admissions policy, inviting students with little or no previous experience as well as those with extensive high school backgrounds to become members of one of the most successful teams at Rice.

## Introduction

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Since Rice opened in 1912, the university has recognized the importance of graduate study and research as a principal means of advancing knowledge. The first Doctor of Philosophy degree was awarded in 1918 in mathematics. Since that time, the graduate area has expanded to encompass the schools of architecture, engineering, humanities, management, music, natural sciences, and social sciences, as well as interdepartmental areas. The graduate program has steadily increased over time; Rice now enrolls over 1,500 graduate students and offers advanced degrees in 31 fields of study.

Graduate programs lead to either research or professional degrees. Research programs generally require the completion of a publishable thesis that represents an original and significant contribution to the particular field of study. Research degrees include the Doctor of Philosophy (Ph.D.), Doctor of Architecture (D.Arch.), Master of Arts (M.A.), and Master of Science (M.S.).

Professional programs provide advanced course work in several disciplines but do not generally include independent research. These programs lead to degrees in most of the major schools including many engineering disciplines. (See the chart on pages 62–65 for a complete listing of degrees offered.)

All degrees conferred by the university are awarded solely in recognition of educational attainments and not as warranty of future employment or admission to other programs of higher education.

## Graduate Degrees

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### Research Degrees

For general information on advanced degree work at Rice, see Requirements for Graduate Study (pages 66–67). Specific requirements for advanced research degrees in each field of study appear, listed by department, in the Graduate Degree Chart (pages 62–65). Students seeking additional material should contact the appropriate department chair (see Department Information Chart on pages 68–71).

**Ph.D. Programs.** The Ph.D. degree is awarded for original studies in the departments listed in the Graduate Degree Chart (pages 62–65); in architecture, the equivalent degree is the D.Arch. Candidates receive a Ph.D. degree after successfully completing at least 90 semester hours of advanced study and concluding an original investigation that is formalized in an approved thesis. As final evidence of preparation for this degree, the candidate must pass a public oral examination. (See also Candidacy, Oral Examinations, and the Thesis on pages 67–68 and 71–72.) The residency requirement for the doctorate is four semesters of full-time study at the university.

**Master's Programs.** The M.A. degree is available in the departments listed in the Graduate Degree Chart (pages 62–65), including certain scientific fields of study. The M.S. degree is offered in the engineering and science fields also listed in the chart. Candidates may undertake the M.Arch., M.Arch. in Urban Design, and M.Mus. degrees as research degrees by adopting the thesis option. Candidates receive a master's degree after completing at least 30 semester hours of study (including thesis hours),

24 hours of which must be taken at Rice. Master's programs require original work reported in a thesis and a public examination. Most students take three or four semesters to complete a master's degree (some programs may require more time). Students receiving a master's degree must be enrolled in a graduate program at Rice University for at least one semester.

Students may also pursue a nonthesis degree in certain departments. This degree would be based on alternative departmental requirements and would include, but not be limited to, the following:

- 30 semester hours of study
- 24 semester hours must be at Rice University
- Minimum residency is one semester of full-time study
- At least 15 hours of course work must be at or above the 500 level
- All courses must be in the relevant field

In certain departments, students may receive a master's degree (called an *Automatic Master's*) when they achieve candidacy for the doctoral degree. Students seeking a master's degree in this manner must submit a petition for the degree, signed by their department chair, to the Office of the Vice Provost for Research and Graduate Studies by February 1 of the year in which the degree is to be awarded. (See also Candidacy, Oral Examinations, and the Thesis on pages 67–68 and 71–72.)

### Professional Degrees

Rice University offers advanced degree programs to prepare students for positions in a number of professional fields. The professional degrees listed in the Introduction (page 60) appear in the Graduate Degree Chart (pages 62–65). In some departments, the professional degree also prepares the student for a doctoral-level program. All professional degrees are master's degrees with one exception: Candidates earn the D.M.A. after concluding a program of advanced music study.

For general information on advanced degree work at Rice, see Requirements for Graduate Study (pages 66–68). Requirements for professional degrees include the successful completion of 30 semester hours or more of upper-level courses (at the 300 level or higher) with at least 24 hours taken at Rice. Additional information and specific requirements for individual degrees appear, listed by department, in the Undergraduate Degree Chart (pages 23–25). Program information and application materials are also available from the department chairs (see Department Information Chart on pages 68–71).

Admission into a professional program is granted separately from admission into a research or thesis program. Students who wish to change from a thesis program to a professional degree program must petition their department in writing. Upon recommendation of the department and approval by the dean's office, the request is sent to the Office of Research and Graduate Studies for consideration and final approval. If approved, students who received tuition waivers while enrolled in the thesis program will be expected to repay the tuition before their professional degrees are awarded. Professional degree programs terminate when the degree is awarded. Students who wish to continue graduate study after completing a professional program must reapply for admission into a research program.

## 62 INFORMATION FOR GRADUATE STUDENTS

## GRADUATE DEGREE CHART

School Department	Graduate Degrees Offered	Additional Options or Areas of Concentration (within majors)
<b>SCHOOL OF ARCHITECTURE</b>		
	M.Arch., M.Arch. in Urban Design, D.Arch.	
<b>GEORGE R. BROWN SCHOOL OF ENGINEERING</b>		
Bioengineering	M.S., Ph.D.	Biochemical engineering, biological systems modeling, biomaterials, biomedical lasers, cellular and molecular engineering, controlled release technologies, metabolic engineering, phytoremediation, spectroscopy, systems engineering and instrumentation, thrombosis, tissue engineering, and transport processes.
Chemical Engineering	M.Ch.E., M.S., Ph.D.	Thermodynamics and phase equilibria, chemical kinetics and catalysis, optimization and process control, rheology and fluid mechanics, polymer science, biomedical engineering, enhanced oil recovery and cleanup of groundwater aquifers, and biochemical reactor engineering
Civil and Environmental Engineering	M.C.E., M.E.E., M.E.S., M.S., Ph.D.	Civil engineering: structural dynamics and control, structures and mechanics, reinforced and prestressed concrete, geotechnical engineering, computer-aided engineering, probability and random vibrations, reliability of systems, and solid mechanics Environmental science: environmental biology, chemistry, toxicology, geology, and planning; surface and groundwater hydrology; water and wastewater treatment; and urban and regional air quality. Environmental engineering: hydrology and water resources engineering; water and wastewater treatment, design, and operation; and numerical modeling
Computational and Applied Mathematics	M.C.A.M., M.C.S.E., M.A., Ph.D.	Numerical analysis, operations research, and differential equations; additional program in computational science and engineering (see Interdepartmental Programs)
Computer Science	M.C.S., M.S., Ph.D.	Algorithms and complexity, artificial intelligence and robotics, bioinformatics, compilers, distributed and parallel computation, graphics and visualization, operating systems, and programming languages
Electrical and Computer Engineering	M.E.E., M.S., Ph.D.	Bioengineering, communication and signal processing, computer architecture and networking, electro-optics, and device physics
Mechanical Engineering and Materials Science	M.M.E., M.M.S., M.S., Ph.D.	Mechanical engineering: mechanics, computational mechanics, stochastic mechanics, fluid dynamics, heat transfer, dynamics and control, robotics, biomedical systems, and aerospace sciences. Materials science: nanotechnology, metals physics, statistical mechanics, metallic solid thermodynamics, materials chemistry, aspects of composites, coatings and thin films, and interface science
Statistics	M.Stat., M.A., Ph.D.	Applied probability, Bayesian methods, bioinformatics, biomathematics, biostatistics, data analysis, data mining, density estimation, epidemiology, environmental statistics, financial statistics, image processing, model building, nonparametric function estimation, quality control, risk management, spatial temporal statistics, statistical computing, statistical genetics, statistical visualization, stochastic processes, and time series analysis



School Department	Graduate Degrees Offered	Additional Options or Areas of Concentration (within majors)
<b>SCHOOL OF HUMANITIES</b>		
Art and Art History	No graduate degree offered	History of art; options in classical archaeology and media studies
Education	M.A.T.	Secondary teaching certificate in conjunction with B.A. in major field
English	M.A., Ph.D.	British and American literature and literary theory
French Studies	M.A., Ph.D.	French literature, language, and culture
German and Slavic Studies	No graduate degree offered	German and German cultural studies
Hispanic and Classical Studies	M.A.	Spanish language and literature
History	M.A., Ph.D.	U.S., European, and other history
Kinesiology	No graduate degree offered	
Linguistics	Ph.D.	Anthropological, applied, cognitive, field, functional or discourse, and English, German, or Romance linguistics; second language acquisition; and language typology and universals
Philosophy	M.A., Ph.D.	Specialization in medical ethics
Religious Studies	M.A., Ph.D.	Religion and contemporary cultures; scriptural interpretation; ethics and philosophy of religion; mysticism, psychology, and religious practices
<b>JESSE H. JONES GRADUATE SCHOOL OF MANAGEMENT</b>		
	M.B.A., M.B.A./Master of Engineering M.B.A./M.D. (with Baylor College of Medicine)	M.B.A. is a general management degree; however, students may have informal concentrations in the following areas: accounting, entrepreneurship, finance, general management, international business, information technology, marketing, operations management, organizational behavior and human resource management, healthcare management, and strategic management and planning; joint nonthesis degree option with all engineering disciplines
<b>SHEPHERD SCHOOL OF MUSIC</b>		
	B.Mus./M.Mus., M.Mus.,  D.M.A.	Composition, choral and instrumental conducting, historical musicology, performance, and music theory  Composition and selected areas of performance
<b>WIESS SCHOOL OF NATURAL SCIENCES</b>		
Biochemistry and Cell Biology	M.A., Ph.D.	Biochemistry, biophysics, developmental biology, cell biology, genetics, molecular biology, neurobiology, structure and function of nucleic acids and proteins, regulatory processes, biochemistry of lipids, enzymology, NMR and crystallography, cellular regulation, oxygen and electron transport, molecular genetics of plants, animals, fungi, bacteria, and bacteriophage
Chemistry	M.A., Ph.D.	Organic chemistry, inorganic chemistry, physical chemistry, nanotechnology, biological chemistry, and theoretical and computational chemistry
Ecology and Evolutionary Biology	M.A., Ph.D.	Biogeochemistry, wetland ecology, plant community and population ecology, insect diversity and community structure, behavioral ecology, sociobiology, and molecular evolution

## 64 INFORMATION FOR GRADUATE STUDENTS

School Department	Graduate Degrees Offered	Additional Options or Areas of Concentration (within majors)
Earth Science	M.A., Ph.D.	Marine geology and geophysics; sedimentology, stratigraphy, paleoceanography, paleoclimatology, evolution of continental margins and carbonate platforms; tectonics, neotectonics, tectonophysics, geodynamics, mantle processes, and space geodesy; remote sensing, potential fields, reflection and lithospheric seismology, wave propagation and inverse theory; kinetics of fluid-solid interactions, low T aqueous geochemistry, petrology, and high T geochemistry
Mathematics	M.A., Ph.D.	Differential and algebraic geometry, ergodic theory, partial differential equations, probability and combinatorics, real analysis, complex variables, and geometric and algebraic topology
Physics and Astronomy	M.A., M.S., Ph.D.	Atomic and molecular physics, biophysics, particle physics, condensed matter physics, surface physics, space physics, astronomy, and theoretical physics
<b>SCHOOL OF SOCIAL SCIENCES</b>		
Anthropology	M.A., Ph.D.	Archaeology and social/cultural anthropology
Economics	M.A., Ph.D.	Econometrics, economic development, economic theory, industrial organization and regulation, international trade and finance, labor, macroeconomics/monetary theory, and public finance
Political Science	M.A., Ph.D.	American government, comparative government, and international relations
Psychology	M.A., Ph.D.	Cognitive-experimental psychology, industrial-organizational/social psychology, and engineering psychology/human-computer interaction

**Interdepartmental and Cooperative Programs**

Opportunities for graduate study are available in a number of interdisciplinary areas. The advanced degree programs listed in the Interdepartmental and Cooperative Programs Chart (below) are administered by the participating Rice departments. They represent fields of study in rapidly developing areas of science and engineering or those areas subject to multiple investigations and interests. Rice has also established ties with other Houston universities and the Texas Medical Center to enable graduate students to receive training in computational biology research, to earn separate degrees simultaneously, or to focus their doctoral study on the specialized field of medical ethics.

**INTERDEPARTMENTAL AND COOPERATIVE PROGRAMS CHART**

Program	Degrees Offered	Departments/Areas of Concentration
<b>INTERDEPARTMENTAL PROGRAMS</b>		
Systems Theory	Master's, Ph.D.	Departments in chemical engineering, mechanical engineering and materials sciences, economics, electrical and computer engineering, and mathematics. Contact: 713-348-4020 or elec@rice.edu
Materials Science and Engineering	Master's, Ph.D.	Departments in chemistry, electrical and computer engineering, mechanical engineering and materials sciences, chemical engineering, and physics. Contact: 713-348-4906 or mems@rice.edu

School Department	Graduate Degrees Offered	Additional Options or Areas of Concentration (within majors)
Applied Physics	Master's, Ph.D.	Departments in physics, chemistry, electrical and computer engineering, mechanical engineering and materials sciences, and space physics and astronomy; sciences that underlie important new and emerging technology. Contact: Rice Quantum Institute, 713-348-6356 or quantum@rice.edu
Computational Science and Engineering	Master's, Ph.D.	Modern computational techniques and use of powerful, new computers in research, development, and design involving the following departments: computational and applied mathematics, biochemistry and cell biology, geology and geophysics, computer science, chemical engineering, electrical and computer engineering, and statistics. Contact: 713-348-4805 or caam@caam.rice.edu
<b>COOPERATIVE PROGRAMS</b>		
Joint Program in Computational Biology	Training opportunities for Ph.D. students	Research in a lab setting, seminars and workshops, and access to advanced resources of W.M. Keck Center for Computational Biology (fellowships available); with Baylor College of Medicine and the University of Houston. Contact: 713-348-4752 or bioc@rice.edu
Joint Program in Law	B.A./J.D.	Accelerated interdisciplinary legal education with Columbia University School of Law; allows Rice students who have completed junior-year requirements to apply to Columbia one year early and complete undergraduate requirements while in law school. Contact: 713-348-4998 or bass@rice.edu
Joint Programs with Medical Colleges	M.D./Ph.D., M.D./M.A., M.D./M.S.	Combined M.D. and advanced research degree for research careers in medicine; with Baylor College of Medicine. Contact: 713-348-5869 or bioeng@rice.edu
Joint Programs in Biomedical Ethics	M.A., Ph.D.	Religious studies degree with the University of Texas Health Science Center at Houston. Contact: 713-348-5201 or reli@rice.edu Philosophy degree with the Baylor College of Medicine and the Institute of Religion. Contact: 713-348-4994 or phil@rice.edu

## Admission to Graduate Study

Graduate study is open to a limited number of extremely well-qualified students with a substantial background in their proposed field of study (this usually, though not always, means an undergraduate major in the field). Each department determines whether applicants have enough preparation to enter a given program, emphasizing the quality of their preparation rather than the particular academic program they completed or the credits they earned.

Applicants for admission to graduate study should contact the chair of the appropriate department for application forms and relevant information about the program. The Department Information Chart (pages 68–71) lists department chairs with department phone/fax numbers and e-mail addresses. Applicants should send all application materials, including transcripts and test scores, to the department chair.

**Application Process.** An application for graduate study should include the completed application form, the application fee, transcript(s), recommendations, and writing samples, if required. Some departments require scores on the aptitude portion of the Graduate Record Examination (GRE) or the Graduate Management Admission Test (GMAT) and an appropriate advanced test; these should be sent directly to the admitting department.

To make sure scores are available when admission decisions are normally made, applicants should take the GRE by the December before the fall for which they are applying. The application deadline for the fall semester is February 1. Some departments, however, may specify an earlier deadline, and departments may occasionally consider late applications.

Admission depends on students' previous academic records, available test scores, and letters of reference from scholars under whom they have studied. Writing samples, portfolios, or statements of purpose may also be required. In general, applicants should have at least a 3.00 (B) grade point average in undergraduate work. Some departments require that applicants take the GRE or GMAT. See individual departmental listings for specific requirement information. Applicants whose native language is not English must take the TOEFL test and score at least 600 on the paper-based TOEFL or score at least 250 on the computer-based TOEFL. For those students who choose to take the IELTS in lieu of TOEFL, the minimum required score is 7.

## Academic Regulations

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### Requirements for Graduate Study

Graduate students must meet the following minimums, deadlines, and course or grade requirements to graduate in good standing from the university. Some departments may have stricter policies and/or requirements.

**Residency**—Master's students must complete at least one semester enrolled in a graduate program at Rice University. Ph.D. students must be enrolled at least four semesters in full-time study at Rice University.

**Full-time study**—Semester course load for full-time students is 9 hours, or more as required by specific departments. Graduate programs at Rice generally require full-time study.

**Part-time study**—Admission of part-time students requires departmental permission, and students must register for at least 3 hours in a semester. All time-to-degree requirements apply to part-time students.

**Time to degree**—Ph.D. students are required to complete their program, including thesis defense, within ten years of initial enrollment in the degree program. Masters students are required to complete their program, including thesis defense, within five years of initial enrollment. In both cases, students have a limit of six additional months from the date of defense to deposit their theses in the Office of Graduate Studies. These time bounds include any period in which the student was not enrolled or enrolled part-time, for whatever reason.

**Time to candidacy**—Ph.D. students must be approved for candidacy before the beginning of the ninth semester of their residency at Rice. Masters students must be approved for candidacy before the beginning of the fifth semester of their residency at Rice.

**Time to defense**—Ph.D. students must defend their theses before the end of the 16th semester of their residency at Rice. Masters students must defend their theses before the end of the eighth semester of their residency at Rice.

**Time to submission of written thesis**—After candidates successfully pass the oral examination in defense of the thesis, they must submit two signed copies of the thesis to the Office of Graduate Studies no later than six months from the date of the examination.

**Credit for previous degrees**—For students who enter a doctoral program with a master's degree, completed at Rice or elsewhere, departments should determine the amount of previous work, if any, that will be counted from the master's degree at issue toward the doctoral degree. Any such credit of one semester or more toward doctoral requirements will result in an equal reduction of the time allowed for (1) the achievement of candidacy, (2) the defense of the Ph.D. thesis, and (3) the total time to the doctoral degree. The maximum credit allowed for students with master's degrees from Rice will be six semesters, and the maximum credit allowed for students with master's degrees from outside Rice will be two semesters.

**Minimum hours**—Students must register for at least 3 hours in a semester.

**Course registration**—Students may register for courses of study and drop or add courses only with the approval of their adviser or the department chair.

**Deadlines**—Students must observe all deadlines listed in the Academic Calendar (pages vii–ix).

**Grades**—In order to graduate, students must achieve at least a B- (2.67) grade point average in courses counted toward the graduate degree. Some programs and departments have more stringent standards. To compute grade point averages, the credit attempted in semester hours for each course and the points for the grade earned (from A = 4.00 to F = 0.00) are multiplied, then the products (one for each course) are added together and the sum is divided by the total credits attempted. See also Probationary Status (page 73).

**Pass/Fail**—All students, except Class III students, may take course(s) Pass/Fail outside their department. They must file a course as Pass/Fail no later than the end of the 10th week of classes; however, they may later convert a Pass/Fail to a graded course by filing the appropriate paperwork with the registrar. Students should be aware that while a grade of P does not affect their Grade Point Average, a grade of F does.

**Satisfactory/Unsatisfactory**—Some departments may assign a grade of S or U. Students should be aware that while a grade of S or U does not affect their Grade Point Average, no credit will be awarded if a grade of U is received.

**Departmental duties**—In most research degree programs, students must undertake a limited amount of teaching or perform other services as part of their training. Assigned duties should not entail more than 10 hours per week, averaged over the semester, or extend over more than eight semesters.

**Employment**—Students receiving a stipend may accept employment only with the approval of the department and the Office of Graduate Studies. Students working for more than 20 hours per week are not normally eligible for full-time status.

**Continuous enrollment**—Students must maintain continuous program involvement and enrollment unless granted an official leave of absence. See Leaves or Withdrawals (page 73) for more information.

### Candidacy, Oral Examinations, and the Thesis

**Approval of Candidacy.** Candidacy marks a midpoint in the course of graduate education. Achieving candidacy for the Ph.D. implies that a graduate student has: (a) completed required course work, (b) passed required exams to demonstrate his/her comprehensive grasp of the subject area, (c) demonstrated the ability for clear oral and written communication, and (d) shown the ability to carry on scholarly work in his/her

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subject area. Requirements for achieving candidacy for the thesis Masters degree are determined at the departmental level. Students enrolled in research degree programs submit their petitions for candidacy for a master's or doctoral degree through the department chair to the vice provost for research and graduate studies. In the petition sent to the vice provost, the department chair identifies the student's thesis director, recommends a thesis committee, certifies that the applicant has fulfilled the departmental requirements, and provides a transcript as evidence that work completed within the department is of high quality.

Students must file their applications for approval of Ph.D. and M.A./M.S. candidacy in the Office of Graduate Studies before November 1 for mid-year conferral and before February 1 for May commencement. Students may take the final oral examination in defense of their thesis only after the vice provost for research and graduate studies approves their candidacy. Ph.D. students must be approved for candidacy before the beginning of the ninth semester of their residency at Rice. Master's students must be approved for candidacy before the beginning of the fifth semester of their residency at Rice.

**DEPARTMENT INFORMATION CHART**

<b>Department Chair</b>	<b>Phone, Fax, and E-Mail</b>	<b>Faculty Research Interests</b>
<b>SCHOOL OF ARCHITECTURE</b>		
Lars Lerup (Dean)	713-348-4044 fax: 713-348-5277 arch@rice.edu	Architecture design, urbanism, theory, and practice
John J. Casbarian (Associate Dean)	713-348-5152	Architecture design and practice
<b>GEORGE R. BROWN SCHOOL OF ENGINEERING</b>		
Bioengineering: Larry McIntire	713-348-5869 fax: 713-348-5877 bioeng@rice.edu	Biochemical engineering, biological systems modeling, biomaterials, biomedical lasers, cellular and molecular engineering, controlled release technologies, metabolic engineering, spectroscopy, systems engineering and instrumentation, thrombosis, tissue engineering, and transport processes
Chemical Engineering: Kyriacos Zygourakis	713-348-4902 fax: 713-348-5478 ceng@rice.edu	Transport and interfacial phenomena, thermodynamics, catalysis and reactor design, optimization and process control, rheology and fluid mechanics, polymer science, biomedical engineering, enhanced oil recovery and cleanup of ground-water aquifers, biochemical reactor engineering
Civil and Environmental Engineering: Joe Hughes	713-348-4949 fax: 713-348-5268 civi@rice.edu	Structural and foundation dynamics (e.g., earth-quake and offshore engineering), structural control, reinforced and prestressed concrete structures, application of probability theory to structural dynamics, experimental studies of structures, geotechnical engineering, and computer-aided engineering  Surface and groundwater hydrology, biochemical process engineering, aquatic chemistry, environmental microbiology, physical-chemical processes, membrane processes, colloid chemistry, GIS and contaminant transport modeling, urban and regional air quality, earth systems, and environmental law
Computational and Applied Mathematics: John E. Dennis	713-348-4805 fax: 713-348-5318 caam@rice.edu	Operations research, mathematical programming, discrete and continuous optimization, numerical linear algebra, inverse problems, computational seismology, optimal design, partial differential equations, and numerical analysis

Department Chair	Phone, Fax, and E-Mail	Faculty Research Interests
Computer Science: Moshe Y. Vardi	713-348-4834 fax: 713-348-5930 comp@rice.edu	Algorithms and complexity, artificial intelligence and robotics, compilers, distributed and parallel computation, graphics and visualization, operating systems and programming languages
Electrical and Computer Engineering: Don H. Johnson	713-348-4020 fax: 713-348-5686 elec@rice.edu	Bioengineering, communications and signal processing, computer architecture and networking, electro-optics, and device physics
Mechanical Engineering and Materials Science: Tayfun Tezduyar	713-348-4906 mems@rice.edu	Mechanical engineering: mechanics, computational mechanics, stochastic mechanics, fluid dynamics, heat transfer, dynamics and control, robotics, biomedical systems, and aerospace sciences. Materials science: nanotechnology, metals physics, statistical mechanics, metallic solid thermodynamics, materials chemistry, aspects of composites, coatings and thin films, and interface science
Statistics: Katherine B. Ensor	713-348-6032 fax: 713-348-5476 stat@rice.edu	Applied probability, Bayesian methods, bioinformatics, biomathematics, biostatistics, data analysis, data mining, density estimation, epidemiology, environmental statistics, financial statistics, image processing, model building, nonparametric function estimation, quality control, risk management, spatial temporal statistics, statistical computing, statistical genetics, statistical visualization, stochastic processes, and time series analysis
<b>SCHOOL OF HUMANITIES</b>		
Art and Art History: Hamid Naficy	713-348-4668/4815 fax: 713-348-4039 arts@rice.edu	Art history: Greek and Roman art and archaeology, early Christian through 20th-century European art, and American art
Education: Meredith Skura	713-348-4826 fax: 713-348-5459 educ@rice.edu	Secondary education
English: Susan Wood	713-348-4840 fax: 713-348-5991 engl@rice.edu	Medieval through 20th-century English literature, American literature, and theoretical bases of literary criticism and genre theory
French Studies: Bernard Aresu	713-348-4851 fax: 713-348-5951 fren@rice.edu	Medieval through contemporary literature, French literary theory, philosophy, and French cultural history
German and Slavic Studies: Harvey Yunis	713-348-4868 fax: 713-348-5964 germ@ruf.rice.edu	All periods of German literature, literature of East Germany, exile literature, medical philology and dialectology, genre theory, methods of criticism, cultural theory, and German cinema
Hispanic and Classical Studies: R. Lane Kauffmann	713-348-5451 fax: 713-348-4863 span@rice.edu	Medieval, golden age, and modern peninsular Spanish literature, modern Spanish American literature, Hispanic linguistics, second language acquisition, and semiotics and literary theory
History: John Zammito	713-348-4948 fax: 713-348-5207 hist@rice.edu	Ancient, medieval history, modern British, French, German, and Balkan history, American Colonial history, Old and New South and Civil War history, legal, constitutional, intellectual, and recent history, military history, history of science, and East Asian and Latin American history
Linguistics: Philip Davis	713-348-6010 fax: 713-348-4718 ukeie@ruf.rice.edu	General and cognitive-functional linguistics, syntax and semantics, discourse analysis, typology, language description and change, and computational linguistics
Philosophy: Steven Crowell	713-348-4994 phil@ricevm1.rice.edu	History of philosophy, metaphysics, ethics, medical ethics, social and political philosophy, and philosophy of law, language, and science

## 70 INFORMATION FOR GRADUATE STUDENTS

Department Chair	Phone, Fax, and E-Mail	Faculty Research Interests
Religious Studies: William B. Parsons	713-348-2440 fax: 713-348-5486 reli@rice.edu	Theological and medical ethics, New Testament and early Christianity, Indo-Tibetan thought and practice, history of Christianity, contemporary continental philosophy of religion, and psychology of religion, Judaism, and Islam
<b>JESSE H. JONES GRADUATE SCHOOL OF MANAGEMENT</b>		
Gilbert R. Whitaker, Jr. (Dean)	713-348-4838 fax: 713-348-5251 ricemba@rice.edu	Earnings management, change communication, financial reporting, accounting standard setting in different countries, stock market volatility, corporate governance, strategic management, decision making, corporate finance, securities markets, marketing strategy, customer satisfaction, corporate performance measurement, customer choice and attitude models, new product diffusion models, service operations management, computer-human interaction, international business and trade, business-government relationships, leadership, firm valuation, brand equity, and business ethics
Robert A. Westbrook (Associate Dean)	713-348-5396 fax: 713-348-5251	
<b>SHEPHERD SCHOOL OF MUSIC</b>		
Michael Hammond (Dean)	713-348-4854 fax: 713-348-5317 musi@rice.edu	Orchestral studies, performance, conducting, composition, theory, and music history
<b>WIESS SCHOOL OF NATURAL SCIENCES</b>		
Biochemistry and Cell Biology: Frederick Rudolph	713-348-4015 fax: 713-348-5154 bioc@rice.edu	Biochemistry, biophysics, developmental biology, cell biology, genetics, molecular biology, neurobiology, structure and function of nucleic acids and proteins, regulatory processes, biochemistry of lipids, enzymology, NMR and crystallography, cellular regulation, oxygen and electron transport, and molecular genetics of plants, animals, fungi, bacteria, and bacteriophage
Chemistry: Kenton Whitmire	713-348-5683 fax: 713-348-5155 chem@rice.edu	Synthesis and biosynthesis of organic natural products, synthesis of small cycloalkanes, molecular recognition and biological catalysis, bioinorganic and organometallic chemistry, main group element and transitional metal chemistry, high-pressure and high-temperature chemistry, fluorine chemistry, chemical vapor deposition, design of nanophase solids, molecular photochemistry and photophysics, infrared kinetic spectroscopy, laser and NMR spectroscopy, study of oriented molecular beams, theoretical and computational chemistry, and study of giant fullerene molecules, carbon nanotubes and their derivatives, polymer synthesis and characterization, molecular electronics, and molecular machines
Ecology and Evolutionary Biology: Ronald Sass	713-348-4919 fax: 713-348-5232 eeb@rice.edu	Biogeochemistry, wetland ecology, plant community and population ecology, behavioral ecology, sociobiology, molecular evolution, and insect diversity and community structure
Earth Science: Alan Levander	713-348-4880 fax: 713-348-5214 geol@rice.edu	Marine geology and geophysics; sedimentology, stratigraphy, paleoceanography, paleoclimatology, evolution of continental margins and carbonate platforms; tectonics, neotectonics, tectonophysics, geodynamics, mantle processes, and space geodesy; remote sensing, potential fields, reflection and lithospheric seismology, wave propagation and inverse theory; kinetics of fluid-solid interactions, low T aqueous geochemistry, petrology, and high T geochemistry
Mathematics: Robin Forman	713-348-4829 fax: 713-348-5231 math@rice.edu	Differential and algebraic geometry, ergodic theory, partial differential equations, probability and combinatorics, real analysis, complex variables, and geometric and algebraic topology



Department Chair	Phone, Fax, and E-Mail	Faculty Research Interests
Physics and Astronomy: F. Bary Dunning	713-348-4938 fax: 713-348-4150 physics@rice.edu	Atomic and molecular physics, biophysics, condensed matter and surface physics, nuclear and particle physics, theoretical physics, observational astronomy of star-forming regions, nebulae and galaxies, solar system studies, theoretical astrophysics and space plasma physics, and earth systems science
<b>SCHOOL OF SOCIAL SCIENCES</b>		
Anthropology: George Marcus	713-348-4847 fax: 713-348-5455 anth@rice.edu	Archaeology, anthropological linguistics, social/cultural anthropology, theory, history, and global change
Economics: Peter Hartley	713-348-4875 econ@rice.edu	Applied microeconomics, economic theory, econometrics, public finance, industrial organization, game theory, monetary economics, labor economics, and micro foundations of macroeconomics
Political Science: T. Clifton Morgan	713-348-4842 poli@rice.edu	Comparative government and political development in Western Europe and Latin America, American government including public policy, Congress and intergovernmental relations, and international relations and conflict
Psychology: Robert Dipboye	713-348-4856 fax: 713-348-5221 psyc@rice.edu	Cognitive psychology, cognitive neuro-psychology, human factors, and industrial/organizational psychology

**Thesis Committee.** The thesis committee administers the oral examination for the student's thesis defense and has final approval/disapproval authority and responsibility for the written thesis.

A thesis committee comprises at least three members. Two, including the committee chair, must be members of the student's department faculty; in doctoral thesis committees, one member must be from another department within the university. At least three members of the committee must meet one of the following requirements:

- Tenured or tenure-track members of the Rice faculty
- Research faculty holding the rank of faculty fellow, senior faculty fellow, or distinguished faculty fellow
- Faculty who have been certified as thesis committee members by the vice provost for research and graduate studies

The committee chair need not be the thesis director. The chair, however, must be either a tenured or tenure-track member of the major department or a research faculty member of the major department. Additional members of the committee, who may or may not meet the above criteria, may be selected with the approval of the department chair. These would be in addition to the three required members.

Candidates are responsible for keeping the members of their committee informed about the nature and progress of their research. They also must establish a schedule for thesis completion and review. The members of the committee, in turn, should review the thesis in a timely way, approving a preliminary form of the thesis before scheduling the oral examination.

**Oral Examination in Defense of Thesis.** The public oral defense of a thesis is intended to be an examination of a completed body of work and should be scheduled only when the dissertation is essentially completed. The defense should be scheduled by the student after consultation with the thesis adviser, who agrees that the thesis is completed and ready to be defended. A candidate must be enrolled in the semester in which his or her oral examination is held. For the purpose of the oral defense only, enrollment in a semester is considered valid through the Friday of the first week of class of the following semester.

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At least one copy of the thesis must be available in the departmental office at least two calendar weeks prior to the date of the oral defense. Oral examinations for the doctoral degree must be announced in *Rice News* at least one week in advance. Oral examination announcements can be submitted to *Rice News* by entering the information into the RiceInfo online events calendar. (Specific instructions and the password needed for a calendar submission should be requested by sending e-mail to graduate@rice.edu when the student has set the date for the defense. The words “Rice News defense announcement” need to appear in the subject line of the e-mail.) When the event is entered into the events calendar, an automatically generated e-mail will be sent to *Rice News* with the information for the *Rice News* calendar.

Students should note that material printed in *Rice News* must be submitted at least two weeks before publication; the *Rice News* calendar editor can provide specific submission dates. Ph.D. candidates therefore should begin scheduling their oral defenses at least three weeks in advance. Should an oral examination for the Ph.D. fall during the summer, the posting of a notice in the RiceInfo events calendar, at least one week prior to the defense, suffices as a public announcement.

Oral examinations for the master’s degree require only that public notice be posted on the department bulletin board one week in advance.

The length of the oral examination and the subject matter on which the candidate is questioned are left to the judgment of the committee. After candidates successfully pass the oral examination in defense of the thesis, they must submit two signed copies of the thesis to the Office of Graduate Studies no later than six months from the date of the examination. If the thesis is not ready for final signature by the end of the six-month period, the “pass” will be revoked and an additional oral defense will need to be scheduled. Extensions of this six-month period for completion without reexamination will be granted only in rare circumstances. Applications for an extension must be made by the candidate with the unanimous support of the thesis committee and approved by the vice provost for research and graduate studies. Students passing the oral examination on or before the end of the first week of classes of any semester do not have to register for that or any subsequent semester even though they may be continuing to make minor revisions to the final copy of their thesis.

Should a candidate fail, the committee chair may schedule a second examination. Students who fail a second time must withdraw from the university.

Students must send a copy of their approval of candidacy form, signed by the thesis committee signifying successful defense of the thesis, to the Office of Graduate Studies within one week after the oral examination. The original approval of candidacy form must be turned in when the thesis is submitted.

Ph.D. students must defend their theses before the end of the 16th semester of their residency at Rice. Master’s students must defend their theses before the end of the eighth semester of their residency at Rice.

**Thesis Regulations and Procedures.** The thesis is the principal record of a student’s work for an advanced degree. It is permanently preserved in the library. Instructions for thesis submission and guidelines for thesis formatting are provided by the Office of Research and Graduate Studies at the time of approval of candidacy. Additional copies of these instructions are available from the graduate studies office and can also be accessed on the Rice website at: <http://rgs.rice.edu/grad/policies/thesis>.

Students submitting a dissertation for the Ph.D., D.Arch., or D.M.A. must fill out a Survey of Earned Doctorates form. All students submitting theses, whether for master’s or doctoral degrees, must complete a University Microfilm contract. Students must pay their fees for microfilming and binding their theses to the cashier before submitting the two copies to the Office of Graduate Studies for approval. The thesis may be submitted to the Office of Graduate Studies at any time, however students must meet the deadline for the thesis submission listed in the Academic Calendar (pages vii–ix).

### Leaves or Withdrawals

**Leave of Absence.** A leave of absence is granted only by the Office of Graduate Studies upon the recommendation of the department chair and only to graduate students in good standing with the university. Students must obtain approval for a leave before the academic semester in question. These requests, approved by the department, must be received in the Office of Research and Graduate Studies prior to the first day of classes.

Leaves are not granted after students register for courses or after the registration period passes. Normally, students may take a leave of absence for no more than two consecutive semesters. Students must pay a reinstatement fee of \$75 upon their return from an official leave.

**Withdrawal and Readmission.** Students who wish to withdraw from Rice during the semester, for any reason, are to notify the chair of their academic department in writing (see Refund of Tuition and Fees, page 49). Failure to register for any period without a leave of absence granted by the Office of Graduate Studies constitutes a de facto withdrawal. Students who later wish to resume study must reapply to the university. Readmission requires the recommendation of the department chair and the approval of the vice provost for research and graduate studies. Accepted students must pay a readmission fee of \$250.

**Nonenrollment.** Students may not do degree work at Rice or work involving Rice faculty or facilities during any period of nonenrollment, except during the period following successful oral defense prior to submission of the final thesis.

### Drop/Add

During the first two weeks of classes, all students may change their registration without a penalty fee by adding or dropping courses with the appropriate adviser's approval. Students must obtain the instructor's permission and the adviser's approval to add a course between the second week and the end of the fourth week of classes. Students may not add courses after the fourth week of classes without the permission of the Office of Graduate Studies.

Students may not drop courses after the end of the 10th week of classes, except by approval of the Office of Graduate Studies (a \$30 fee is assessed for courses dropped after the 10th week by non-first-semester students). The student is to prepare a written petition that must be approved by the student's adviser and department chair and then forwarded to the vice provost for consideration.

Students who add or drop courses after the second week but before the deadlines noted above are charged for each drop/add form submitted according to the fee schedule (see page 30).

### Academic Discipline

**Probationary Status.** Students whose cumulative grade point average or the average for the most recently completed semester falls below 2.33 are placed on probationary status; some departments may have more stringent standards. Although the department in most cases sends the student a letter of warning, probationary status applies whether or not a letter has been issued. A second semester of probationary status leads to automatic dismissal by the Office of Graduate Studies unless the student's department presents a plea for exception that is approved by the vice provost for research and graduate studies. Departments are free to dismiss a student in the first semester of probationary status if they issue a warning before taking action.

**Dismissal.** Reasons for student dismissal include unsatisfactory progress (see page 73) or behavior judged by Rice to be disruptive or otherwise contrary to the best interests of either the university or the student.

### Appeal

Students may petition the Office of the Vice Provost for Research and Graduate Studies regarding the application of any academic regulation. Petitions should go through department chairs and divisional deans, who will be asked to comment on their merits. In some cases, the vice provost will seek the advice of the Graduate Council. For appeals regarding nonacademic matters, see the following section on problem resolution.

### Procedures for Resolution of Problems

Problems or conflicts may arise during a student's graduate education. Students should take responsibility for informing the appropriate faculty of any such problem. All parties involved should work together amicably with the goal of resolving the problem informally if at all possible. When attempts to resolve a problem informally do not meet with success, the following grievance procedure should be adopted.

1. The student should submit the grievance in writing to the departmental chair, who will then attempt to resolve the problem.
2. If the student remains unsatisfied, the problem should be presented to a departmental committee for resolution. This committee should be a standing committee and not the student's own review or dissertation committee. Both the student and the chair should submit a written record of their views to this committee.
3. If the student remains unsatisfied, the problem should be referred to a standing subcommittee designed at Graduate Council and composed of three faculty members (representing diverse disciplines within the university), one graduate student and the associate dean for graduate studies. A written report of proceedings at stage two should be presented to the chair of graduate council, for forwarding to the subcommittee, together with all other written materials generated during the investigation. The decision of this subcommittee will be considered final.

## Tuition, Fees, and Expenses

The tuition and fees for graduate students in this section are for the 2001–2002 academic year only and are subject to change in subsequent years. Current tuition and fees for all graduate students, full time and part time, are as follows, in effect through four or six semesters as indicated below:

	Annual	Semester	Hour
Tuition—			
all schools except Jones School	\$17,300.00	\$ 8,650.00	\$ 962.00
Tuition—			
Jones School M.B.A.	\$21,500.00	\$10,750.00	\$1,195.00
Tuition—			
Jones School E.M.B.A. (2-year rate)	\$60,000.00		
Health service fee	\$ 275.00	\$ 137.50	
Graduate Student Association fee	\$ 20.00	\$ 10.00	
Shuttle fee	\$ 31.00		
Honor Council fee	\$ 1.00		
Student Organizations Fund	\$ 8.00		
Jones School activities fee	\$ 65.00		

**Away Status.** Students pursuing their studies outside of the Houston area (students on “away” status) must be registered and pay tuition but are not required to pay the fees listed on page 74.

**Reduced Tuition.** After six semesters of full-time study in one degree program (excluding the summer semesters), continuing students enter a reduced-tuition category of \$962 per year (\$481 per semester). Students who are admitted with a relevant master’s degree, i.e. a master’s degree that counts toward a doctoral program at Rice, may become eligible for reduced tuition earlier than those entering a doctoral program without a relevant master’s degree. Semesters credited toward reduced tuition will be limited to one degree program. In extraordinary circumstances, the Office of Graduate Studies may consider petitions for exceptions.

**Health Insurance.** All students, full time, part time, and those on away status, must also carry health insurance (see pages 78–79).

**Other Fees.** Unless students elect a special payment plan, they must pay all tuition and fees for the fall semester by the middle of August, and for the spring semester by the end of December. Past these deadlines, a late payment penalty of \$60 will be assessed.

Other fees applicable under special circumstances:

Late registration fee (starts the second week of class)	\$ 90
Reinstatement fee upon return after official leave of absence	\$ 75
Readmission fee upon return after withdrawal or failure to register	\$250
Fee for off-campus preceptorship programs credited on transcript	\$170/semester
Tuition for part-time and Class III students	\$962/credit hour
Registration fee for part-time and Class III students	\$ 95/semester
Late application fee, Class III	\$ 60
Failure to preregister	\$ 40
Tuition for education internship	\$170/semester
Enrollment continuance fee (study abroad)	\$105/semester

*For more information, see Refund of Tuition and Fees (page 49).*

For \$95 each, graduate students and their spouses may purchase from the Cashier’s Office an athletic events sticker, which admits them to all regularly scheduled Rice Athletic events.

## Financial Aid

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### Fellowships, Scholarships, and Assistantships

A range of fellowships, scholarships, and assistantships are available at Rice. Most graduate students in degree programs requiring a thesis are supported by fellowships or research assistantships.

**Rice Graduate Fellowships.** Graduate students with high academic records and strong qualifications receive support through Rice fellowships. In most cases, these fellowships provide a stipend plus tuition for the nine-month academic period. Departments may nominate particularly outstanding entering students for a Rice Presidential Fellowship.

**Rice Graduate Tuition Scholarships.** Students whose previous records show marked promise but for whom no graduate fellowships are available may receive full or partial graduate tuition scholarships, which do not include a stipend.

**Research Assistantships.** Usually funded from grants and contracts, research assistantships are available in many departments, especially in the Schools of Natural Sciences and Engineering. Qualified students (usually second-year or later) receive these awards to provide assistance on faculty research projects, work that usually contributes to the student's own thesis. In some departments, a limited number of teaching assistantships may be available to advanced students.

**Eligibility.** Fellowship, scholarship, and assistantship recipients are selected by the individual departments, subject to the approval of the Office of Graduate Studies. Students should send their applications for such awards directly to the department involved.

To receive Rice fellowships, graduate tuition scholarships, or assistantship aid, students must be engaged in full-time graduate study; part-time students and students who are not enrolled are not eligible for such aid.

Students receiving stipends from fellowships or assistantships may not accept any regular paid employment on or off campus without the explicit permission of the department and the Office of Graduate Studies. Full-time students, whether receiving stipend support or not, may not accept paid employment in excess of 20 hours per week.

### **Loans and Work-Study Financial Aid**

In addition to fellowships, scholarships, and assistantships, the Office of Student Financial Services offers need-based assistance in the form of loans and federal work-study employment.

**Subsidized William D. Ford Federal Direct Loans.** Graduate students may process these loans through Rice up to a maximum eligibility of \$8,500 per year, as set by the Federal Government. No interest accrues and no payment is required under the following conditions:

- While a student is enrolled at least half time at Rice
- While a student is enrolled full time in any eligible post-secondary institution
- For six months after withdrawing from Rice

Repayment begins after this period, including a variable interest rate not to exceed 8.25 percent (adjusted each July 1) on the unpaid principal balance. Depending on the size of the total loan commitment, the standard repayment period is 10 years. However, under special circumstances, the repayment period may be extended. Students should submit a completed William D. Ford Federal Direct Loan Request Form application, with supplements and 1040s, to the Office of Student Financial Services.

**Unsubsidized William D. Ford Federal Direct Loans.** Graduate students may use this program to borrow up to \$10,000 per year to an aggregate of \$73,000 (undergraduate and graduate combined). Interest on these loans accrues during the in-school and deferment periods, but students do not have to begin paying on the principal and interest until they leave Rice. The interest rate on the unpaid balance of the loan is a variable rate not to exceed 8.25 percent (adjusted each July 1).

**Federal Work-Study Employment.** Federal work-study employment funding is available to students who meet eligibility criteria set by the federal government. Interested students should file a Free Application for Federal Student Aid (FAFSA) and a Rice Graduate Financial Aid Application. Earnings are limited to the amount shown on the letter.

**Special Loan Programs.** A Gulf Oil Corporation Foundation Loan Fund and the Benjamin S. Lindsey and Veola Noble Lindsey Memorial Loan Fund are available to help students working toward a degree meet their educational expenses, but funds are limited. Interested students may contact the Office of Student Financial Services. Those wishing to apply for a loan under either of these programs should begin the application process the summer before the academic year for which they are seeking assistance.

**The Professor John A. S. Adams, Sr., Memorial Graduate Student Loan Fund.** This fund provides financial assistance, in the form of loans, to graduate students at Rice University. Students wishing to apply for such a loan should obtain an application from the Office of Student Financial Services and return the completed application to that office. Guidelines for the program are:

- Individual loans are made for an amount not to exceed \$1,500.
- Loans are made for a period of up to one year and may be renewable on an annual basis.
- The interest rate applicable to an Adams' loan is determined by the university.
- Graduate students must be enrolled on a full-time basis to be eligible to apply for a loan and must maintain full enrollment during the full term of the loan.
- Upon completion, applications are submitted to the vice provost for research and graduate studies for approval.
- Loans are available during the full course of the academic year.
- Loans must be repaid before graduation.

**Emergency Loan Fund.** Established through gifts from the Graduate Wives Club of 1972–73, the Graduate Student Association, and various faculty members, this fund makes available emergency loans to help graduate students at Rice with short-term needs. Loans are limited to \$250 and must be repaid within three months. In lieu of interest, a charge of \$1 per \$50 loaned is assessed to maintain the fund.

**Other Fellowships, Honors, and Prizes.** Provisions are made for a variety of fellowships, scholarships, and prizes available to graduates of this and other universities. Memorial fellowships that have been founded and endowed by gift or bequest on the part of friends of Rice University provide stipends enabling the holders to devote their time to study and research in their chosen fields. There are also several industrial fellowships maintained by companies interested in the development of technical fields and the training of competent scientists, engineers, and business executives.

Persons desiring consideration for appointment as fellows should consult with the department in which they wish to do research. However, not all fellowships are available every year.

## Graduate Student Life

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### Graduate Student Association

All full-time students in the graduate program are members of the Graduate Student Association, which is the sole organization representing graduate students as a body. The governing body of this organization is the Graduate Student Association Council, consisting of a representative from each department offering graduate study and a president, vice president, secretary, and treasurer elected by the council. Graduate students also participate in university affairs through their representatives on many standing and ad hoc university committees, such as the Graduate Council, the Research Council, and various department committees.

One of the functions of the Graduate Student Association is to encourage social interaction among graduate students from different departments. To that end, the association organizes a variety of social activities open to all members of the graduate student body.

### Housing for Graduate Students

The new Rice Graduate Apartments are housed in a garden-style complex located on a 2.7-acre site just north of campus. The project features attractive landscaping and good lighting in all common areas, designed to enhance both the security and the aesthetics of pedestrian, bike, auto paths, parking, and recreational areas. Electronically controlled gates for both pedestrian and vehicular paths are provided. Handicap accessibility is also an important feature. A shuttle bus travels back and forth between the apartments and campus.

There are 112 units, including one-bedroom, two-bedroom, three-bedroom, and efficiency apartments. The complex is designed with a centrally located space for social activities, a laundry room on each floor, a study room equipped with computers, enclosed areas with locks for bike racks, and two courtyards. Every apartment has a living area, a fully equipped kitchen, cable TV connection, and a network drop for a personal computer. Housing is assigned on a space-available basis. Call Campus Housing at 713-348-5445 for further information.

In addition to the Graduate Apartments, rooms and apartments are usually available for rent within walking or bicycling distance of the campus. Houston has a reasonable cost of living for a city of its size.

The Information Desk, the Office of Student Activities, and the Graduate Student Association keep a record of available rooms and apartments listed with the university by area landlords. The daily newspapers and a weekly *Greensheet* are other sources of rental housing. Incoming graduate students should arrive in Houston several days early to allow themselves time to find suitable housing.

### Health Requirements for Graduate Students

Paying the student health service fee gives graduate students access to both the Student Health Service and Rice Counseling Center (see pages 11–12). New graduate students may not register for or attend classes until they have completed and returned the health data form to Rice and met the immunization and TB screening requirements.

All graduate students must have health insurance. Students may purchase insurance through the university at two levels of coverage, as described in a brochure available in the Cashier's Office and the Office of Student Activities. Rice's group coverage for the 2001–2002 academic year is effective from 12:01 A.M.,



August 15, 2001, until 12:01 A.M. August 15, 2002. Dependent coverage is also available. Students who have other medical insurance should sign a waiver card showing proof of insurance and return it to the Cashier's Office by August 10, before classes begin, to avoid automatic billing.

## **Class III Students in Nondegree Programs**

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Students with a 3.00 (B) or better grade average and an undergraduate or graduate degree from an accredited college or university may apply for admission as Class III students. These students may take courses for credit without being admitted to a specific degree program. Registration requires the permission of the instructor and approval by the vice provost for research and graduate studies. All Class III applications to accounting and management courses require approval of the Jesse H. Jones Graduate School. Class III students must register for at least 3 hours and cannot take courses on a pass/fail or satisfactory/unsatisfactory basis. Class III students must receive at least a B for all classes taken or they will not be allowed to remain in the Class III program.

Students may not use courses taken under this arrangement to fulfill the requirements for a Rice degree unless and until they have been accepted into a degree program by an academic department (as well as, in the case of graduate students, by the vice provost for research and graduate studies) and received department approval; students are responsible for obtaining the proper approvals. Students may request that the department allow up to 3 courses taken as Class III to count toward their graduate degree.

### **Applications for Class III**

Applications and course request forms are available from the Office of Graduate Studies. Official transcripts from all colleges and universities the student has attended should be mailed directly by the institutions to the Office of Graduate Studies. Students who were previously Class III students must complete a new application (without transcripts) for each such semester. All application materials are due by the workday closest to August 1 for fall semester courses and December 1 for spring semester courses. Late applications are not considered after classes have begun.

### **Tuition and Fees for Class III**

The tuition for 2001–2002 is \$962 per semester hour, plus a \$95 registration fee each semester. All fees are payable during registration, which students must complete during the second week of class. Students failing to submit their applications by the deadline must pay a late application fee of \$60, and students registering after the second week of class must pay a \$90 late registration fee. For some courses, students may be charged for computer time. If a class fills with degree students, instructors may drop Class III students up to the end of the third week of class. In that case, the tuition (less \$25 of the registration fee) will be refunded.

### **Foreign Graduate Students/Class III**

Because Class III is not a degree-granting program, foreign graduate students enrolled as Class III students cannot receive visas from Rice University. B–2 visitors may be ineligible for enrollment as Class III students. The vice provost for research and graduate studies and the foreign student adviser will make a determination in those cases.

# Ancient Mediterranean Civilizations

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## The School of Humanities

### Director and Adviser

Hilary Mackie

#### Professors

Werner H. Kelber  
 Roderick J. McIntosh  
 Susan Keech McIntosh  
 Donald Ray Morrison  
 Harvey E. Yunis

#### Associate Professors

James D. Faubion  
 Michael Maas  
 Carol E. Quillen  
 Paula Sanders  
 Kristine Gilmartin Wallace

#### Assistant Professors

Eva Haverkamp  
 Matthias Henze  
 Scott McGill

### *Degree Offered: B.A.*

This interdisciplinary major in the cultures of ancient Greece and Rome, Judaism, early Christianity, and early Islam, as well as their antecedents, explores these traditions both for their intrinsic interest and for the contributions each has made to contemporary Western society. This combined focus on ancient cultural history in its broadest sense and on perspectives offered by cultural criticism enables students to examine the beginnings of the civilization in which they now participate.

Courses for this major address common questions about the transmission and transformation of cultures in the ancient Mediterranean world. Students examine sources, such as texts, artifacts, and institutions that illuminate the process. They study how shifting cultural centers and frontiers in this world are delineated, and they explore the general integration and disintegration of specific ancient cultures. This major also offers opportunities for archaeological fieldwork and study abroad.

Rice is a sponsor of the American School of Classical Studies at Athens, the American School of Oriental Research, and the Intercollegiate Center for Classical Studies in Rome. Students majoring in Ancient Mediterranean Civilizations are encouraged to study in these programs as well as in the College Year in Athens program.

### **Degree Requirements for B.A. in Ancient Mediterranean Civilizations**

For general university requirements, see Graduation Requirements (pages 16–18). Majors in Ancient Mediterranean Civilizations must compete at least 30 semester hours (10 courses). Students must take a core course (AMC 200, CLAS 207, or CLAS 208) near the beginning of their studies, and may select from the following courses to fulfill their requirements for the major.

*For the most current and accurate list of AMC courses offered in fall 2001 and spring 2002, please visit the AMC website at <http://www.ruf.rice.edu/~amc>.*

**NOTE:** Courses listed with an asterisk (\*) after the course number will be offered during the 2001–2002 academic year.

### **Core Courses**

- AMC 200 *Origins of Western Civilizations: Athens, Rome, and Jerusalem*  
 CLAS 207 *Greek Civilization: Literature and Society—The Development of Drama and Historiography in Classical Athens*  
 CLAS 208\* *Roman Civilization*

### **Anthropology**

- ANTH 203 *Human Antiquity: An Introduction to Physical Anthropology and Prehistory*  
 ANTH 205\* *Introduction to Archaeology*  
 ANTH 325 *Self, Sex, and Society in Ancient Greece*  
 ANTH 345\* *The Politics of the Past: Archaeology in Social Context*  
 ANTH 362\* *Archaeological Field Techniques*  
 ANTH 363 *Early Civilizations*  
 ANTH 377 *The Ancient City*  
 ANTH 460\* *Advanced Archaeological Theory*  
 ANTH 474 *Advanced Seminar on the Prehistoric Landscape*

### **Classical Studies**

- CLAS 222 *Perspectives on Greek Tragedy*  
 CLAS 225\* *Women in Greece and Rome*  
 CLAS 315 *Socrates: The Man and His Philosophy*  
 CLAS 316 *Democracy and Political Theory in Ancient Greece*  
 CLAS 335\* *Myth and Storytelling: Ancient, Medieval, and Modern Traditions*  
 CLAS 351 *Epic and Saga*  
 CLAS 352 *Periclean Athens*

### **Greek Studies**

- GREE 101\* *Introduction to Ancient Greek I*  
 GREE 102\* *Introduction to Ancient Greek II*  
 GREE 201\* *Intermediate Greek I*  
 GREE 202\* *Intermediate Greek II*  
 GREE 301 *Advanced Greek I*  
 GREE 302 *Advanced Greek II*  
 GREE 491\* *Directed Reading*  
 GREE 492\* *Directed Reading*

### **Latin**

- LATI 101\* *Elementary Latin I*  
 LATI 102\* *Elementary Latin II*  
 LATI 201\* *Intermediate Latin I*  
 LATI 202\* *Intermediate Latin II*  
 LATI 301 *Advanced Latin I: Apuleius and Petronius*  
 LATI 302\* *Advanced Latin II: Horace*  
 LATI 310 *Advanced Latin: Virgil*  
 LATI 312 *Advanced Latin: Ovid*  
 LATI 313\* *Advanced Latin: Literature and Society in the Latin Republic—Catullus and Cicero*  
 LATI 491\* *Directed Reading*  
 LATI 492\* *Directed Reading*

### **History**

- HIST 113\* *God, Time and History*  
 HIST 152\* *Freshman Seminar in Ancient History*  
 HIST 200 *Origins of Western Civilizations: Athens, Rome, and Jerusalem*  
 HIST 202\* *Introduction to Medieval Civilization: The Early Middle Ages*  
 HIST 205 *Myth, History, and the Problem of the Past*  
 HIST 207 *Greek Civilization: Literature and Society*

- HIST 273 *Ancient and Medieval Jewish History, 70–1492*  
 HIST 281\* *The Middle East from the Prophet Muhammad to Muhammad Ali*  
 HIST 283\* *Women in the Islamic World*  
 HIST 306 *Politics and Society in Ancient Greece*  
 HIST 307\* *Imperial Rome, from Caesar to Diocletian*  
 HIST 308 *The World of Late Antiquity*  
 HIST 309 *Decline and Fall of the Roman Empire*  
 HIST 320 *Science in Antiquity and the Middle Ages*  
 HIST 325\* *Introduction to Medieval Civilization: The Early Middle Ages (enriched version)*  
 HIST 373 *Ancient and Medieval Jewish History, 70–1492 (enriched version)*  
 HIST 377 *The Ancient City*  
 HIST 445\* *Jews and Christians: Perceptions of the Other*  
 HIST 451\* *Philosophies and Theologies of History*  
 HIST 460 *Advanced Seminar in Ancient History*

### **History of Art**

- HART 101\* *Introduction to the History of Western Art: Prehistoric to Gothic*  
 HART 310 *The First Civilizations*  
 HART 311 *Art of the Ancient Aegean and Eastern Mediterranean*  
 HART 312 *Greek Architecture*  
 HART 314\* *Art and Architecture in the Hellenistic World*  
 HART 315 *Roman Art and Archaeology*  
 HART 316 *Greek Sculpture*  
 HART 317 *Late Antique/Early Christian Art and Architecture*

- HART 318\* *Special Topics in Ancient Art*  
 HART 319\* *Independent Study in Ancient Art*  
 HART 327 *The City in the Eastern Mediterranean*  
 HART 329\* *Independent Study in Early Christian, Byzantine, and Islamic Art*

### **Linguistics**

- LING 437 *History of Linguistics*

### **Philosophy**

- PHIL 201\* *History of Philosophy I*  
 PHIL 301\* *Ancient and Medieval Philosophy*  
 PHIL 307\* *Social and Political Philosophy*  
 PHIL 501\* *Seminar in Ancient and Medieval Philosophy*

### **Religious Studies**

- RELI 122 *The Bible and Its Interpreters*  
 RELI 125\* *Introduction to Biblical Hebrew I*  
 RELI 126\* *Introduction to Biblical Hebrew II*  
 RELI 127 *Intermediate Biblical Hebrew*  
 RELI 200\* *The Bible in Western Tradition*  
 RELI 223\* *Qu'ran and Commentary*  
 RELI 302 *Jewish-Christian Dialogue*  
 RELI 307 *History of Christianity: The First Four Centuries*  
 RELI 308 *Canonical Gospels: Narrative and Social Setting*  
 RELI 370 *Dynamics of Classical Judaism*  
 RELI 383 *The Dead Sea Scrolls*

### **University Courses**

- UNIV 302 *Communication, Cognition, and Culture*

**See AMC (page 235) in the Courses of Instruction section.**

# Anthropology

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## The School of Social Sciences

### Chair

George E. Marcus

### Professors

Benjamin Lee  
 Roderick J. McIntosh  
 Susan Keech McIntosh  
 Julie M. Taylor  
 Stephen A. Tyler

### Associate Professors

James D. Faubion  
 Eugenia Georges

*Degrees Offered:* B.A., M.A., Ph.D.

The major in anthropology has 2 areas of concentration: cultural anthropology and archaeology. The focus in cultural anthropology is on contemporary theoretical issues. By reading primary sources, students gain an exposure to the styles of argument and reasoning of a broad range of theorists. They can then engage in the ongoing discussion and definition of central problems within the field. Fieldwork and ethnography are important in the doctoral research.

In archaeology, the focus is on research skills in the library, the field, and the laboratory. Most students also develop at least one analytical skill, such as remote sensing, archaeological statistics, osteology, or geomorphology, drawing on the university's extensive laboratory and computer facilities.

Students may organize a major in one or both fields or combine a major in anthropology with one in another discipline.

### Degree Requirements for B.A. in Anthropology

For general university requirements, see Graduation Requirements (pages 16–18). Students majoring in anthropology must:

- Complete a total of 30 semester hours of departmental courses (10 courses)
- Have a plan of study approved by the undergraduate adviser

With department approval, students may substitute for departmental courses at most 6 hours of courses from outside the major that are related to their plan of study. The department recommends that students intending to pursue graduate study acquire a reading knowledge of 1 or 2 European languages.

**Honors Program.** Majors considering a career in anthropology should apply to the honors program, as should those who wish to include advanced training and an intensive, individual research project in their undergraduate education. Anthropology faculty determine acceptance into the program. More information is available from the department office; see also Honors Programs (page 33).

## Degree Requirements for M.A. and Ph.D. in Anthropology

Because each field of specialization offers different opportunities for training and different research orientations, the department seeks applicants with a defined interest in either cultural anthropology or archaeology; an undergraduate background in anthropology is desirable but not required. Entering students devise a detailed first-year plan of study and provisional plans for succeeding years in consultation with an adviser. The plan should emphasize broad training in the selected field before the eventual definition of a project for dissertation research. For general university requirements, see Graduate Degrees (pages 60–65).

**M.A. Program.** Graduate students may earn the M.A. only by obtaining approval of their candidacy for the Ph.D. For the M.A. as a terminal degree, students must complete:

- 30 semester hours of approved course work
- 1 of the 3 special papers required for the Ph.D.
- A thesis

**Ph.D. Program.** For the Ph.D. degree, students must accomplish the following:

- Complete 3 substantial papers, each emphasizing an analytical, research, and writing skill appropriate to their field of specialization (should be completed during the first two years of study)
- Demonstrate reading competency in 1 foreign language
- Prepare a satisfactory proposal for dissertation research, based in substantial part on field research
- Complete and defend the dissertation

**Special Options.** The department will arrange **seminars and tutorials** on any topic relevant to a student's training; these seminars may be conducted in supervisory consultation with scholars in other disciplines as well as with adjunct faculty. Students interested in the specialized field of **medical anthropology** may take advantage of the extensive resources of the Texas Medical Center through ties established with the University of Texas School of Public Health and Graduate School of Biomedical Sciences; students may earn degree credit for formal courses taken at both schools.

**Financial Support.** All first-year students receive the same level of support: a combination of graduate fellowships and tuition scholarships. These awards are renewed for a further two years of study.

**See ANTH (pages 235–249) in the Courses of Instruction section.**

# Architecture

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## The School of Architecture

### Dean

Lars Lerup

### Associate Dean

John J. Casbarian

### Professors

William T. Cannady

Gordon G. Wittenberg, Jr.

### Associate Professors

John Biln

Sanford Kwinter

Spencer W. Parsons

Albert H. Pope

### Assistant Professors

David Brown

Fares el-Dahdah

Dawn Finley

Carlos Jimenez

Keith Krumwiede

Nana Last

Jason Payne

### Lecturers

Louis DeLaura

Alan Fleishacker

James Furr

Tom Lord

Mark Oberholzer

Frank S. White

### Adjunct Lecturer

Stephen Fox

### Visiting Critics

Luke Bulman

Nonya Grenader

Doug Oliver

William Williams

### Visiting Professor

Danny M. Samuels

*Degrees Offered:* B.A., B.Arch., M.Arch., M.Arch. in Urban Design, D.Arch.

The principal goal of the School of Architecture is to contribute to a more humane environment. The school focuses on teaching and research, the development of a broad liberal education for undergraduates in the allied sciences and arts of architecture, and professional graduate and postgraduate education in architecture and urban design. Intimate student-faculty interaction, academic freedom, and unrestricted institutional cooperation within and outside the university are distinctive qualities of the architecture degree programs at Rice.

The undergraduate programs maintain a balance between academic studies and professional practice. Lectures and other public programs, visiting faculty, scholarly presentations, and the Preceptorship Program, which provides a one-year internship in outstanding architectural offices throughout the U.S., Europe, and Japan, all complement the school's core of distinguished teachers and practitioners.

The graduate programs have three areas of emphasis: architectural design, with particular attention paid to history, theory, and practice; urban design, where the concern is the emerging form of the American city; and research in computer visualization that uses the resources of the state-of-the-art Rice Advanced Visualization Lab.

## Degree Requirements for B.A. in Architecture or Architectural Studies

For general university requirements, see Graduation Requirements (pages 16–18). The conditions specified here for each major also satisfy the university distribution requirements.

**B.A. in Architecture.** The curriculum for architecture majors is divided into a foundation sequence taken in the freshman and sophomore years and a preprofessional sequence taken in the junior and senior years. The foundation sequence consists of four semesters of design studios and other related courses in architecture. The first-semester studio develops basic design skills through directed explorations and problem-solving exercises in form, texture, color, material, and structures. In the subsequent 3 studios, through a carefully sequenced series of exercises, students are introduced to a broad range of architectural design issues, processes, and methods. Students are required to take 4 courses in the history and theory of art and architecture during the freshman and sophomore years in addition to two semesters of architectural technology. They must also complete university distribution requirements. It is recommended that students take an introductory drawing course during their first two years of study to develop visual skills.

Students who satisfactorily complete the foundation sequence may, upon approval of their major, enter the junior and senior year preprofessional sequence. The fall studios for the third and fourth years are organized around the workshop model and emphasize complex building/computer applications and urban design issues, respectively. The spring studios are vertically integrated, allowing students to select offerings emphasizing specialized design topics such as technology, landscape, historical precedent, and urban design. During the third and fourth years, students are required to take 2 additional technology courses and to fulfill all remaining school or university distribution requirements. Students wishing to pursue the professional degree in architecture may apply for admission to the Bachelor of Architecture (B.Arch.) degree program during the second semester of the fourth year.

**B.A. in Architectural Studies.** Students who have been admitted as architecture majors and who have successfully completed the two-year foundation program may choose the architectural studies curriculum. The first four semesters of the curriculum are identical to the foundation sequence of the architecture major except for the omission of 1 technology course. Subsequent requirements are the completion of 1 additional studio and 4 elective courses in architecture. The program provides basic preparation for later professional study while allowing students to pursue other academic interests in depth.

**Bachelor of Architecture (B.Arch.) Program.** The Bachelor of Architecture program is only open to students who have completed the undergraduate preprofessional architecture program at Rice. Upon admission, students are assigned a preceptorship, which takes place immediately after receipt of the Bachelor of Arts in Architecture degree. The preceptorship program balances academic learning with professional experience. Qualified students who have been admitted to the B.Arch. degree program are assigned to work for a year in the United States or abroad with leading architectural offices designated by the school as preceptors. The B.Arch. degree requires the successful completion of the B.A. in architecture, completion of the two-semester preceptorship, and completion of 2 graduate studios and 5 approved lecture or seminar courses.



## Typical Curriculum for B.A. in Architecture

### **First Semester**

ARCH 101 *Principles of Architecture I*  
 HART 101 *Introduction to History of Art*  
 PHYS 101 *Mechanics (with lab)*  
 LPAP 101 *Lifetime Physical Activities*  
 Approved architecture restricted distribution course in humanities

### **Second Semester**

ARCH 102 *Principles of Architecture I*  
 ARCH 132 *Freshman Seminar*  
 HART 102 *Introduction to History of Art*  
 LPAP 102 *Lifetime Physical Activities*  
 MATH 101 *Single Variable Calculus*  
 Approved architecture restricted distribution course in humanities

### **Third Semester**

ARCH 201 *Principles of Architecture II*  
 ARCH 207 *Introduction to the Design of Structures*  
 HART 345 *Renaissance and Baroque Architecture in Italy*  
 Studio Art Elective\*  
 Elective\*

### **Fourth Semester**

ARCH 202 *Principles of Architecture II*  
 ARCH 214 *Design of Structures II*  
 ARCH 346 *19th- and 20th-Century Architectural History*  
 Approved architecture restricted distribution course in social sciences  
 Elective\*

### **Fifth Semester**

ARCH 301 *Principles of Architecture III*  
 ARCH 315 *Design of Structures III*  
 Architectural Theory Elective  
 Elective\*  
 Elective\*

### **Sixth Semester**

ARCH 302 *Selected Architectural Problems I*  
 ARCH 316 *Building Climatology*  
 Elective\*  
 Elective\*  
 Elective\*

### **Seventh Semester**

ARCH 401 *Principles of Architecture IV*  
 Elective\*  
 Elective\*  
 Elective\*

### **8th Semester**

ARCH 402 *Selected Architectural Problems II*  
 Elective\*  
 Elective\*  
 Elective\*

\*All courses must be selected to satisfy both architecture major requirements and university distribution requirements.

**Preceptors**

Backen Arrigoni & Ross, Inc.  
San Francisco

Cambridge Seven Associates  
Cambridge

Gensler & Associates  
London, Los Angeles, New York,  
San Francisco

Michael Graves Architects and  
Industrial Design  
Princeton

HTA Architects  
London

Kohn Pedersen Fox, Architects  
London, New York

Machado–Silvetti Associates  
Cambridge

Mitchell Giurgola  
New York

NBBJ  
Seattle

Ong & Ong Architects  
Singapore

Pei, Cobb, Freed & Partners  
New York

Cesar Pelli & Associates  
New Haven

Renzo Piano Building Workshop  
Genoa, Paris

Robert A. M. Stern Architects  
New York

Venturi Scott–Brown & Associates  
Philadelphia

Weiss/Manfredi Architects  
New York

Zimmer Gunsul & Frasca  
Los Angeles

**Master of Architecture**

The Master of Architecture (M.Arch.) program prepares graduates for a full range of professional activities in the field of architecture. It is offered to individuals who possess a bachelor's degree. Students follow a course of study in all four areas of the curriculum: design; history, theory, and criticism; structures, practice, and environments; and computing, logic, and representation. These areas of study are sustained by groups of courses from which students may choose offerings according to the requirements of their particular program. Strong emphasis is given to developing design skills, logic, and imagination through an intensive series of design studio courses. Students are also required to prepare an independent thesis before graduating. A potential exists for dual degrees.

The Master of Architecture program is accredited by the National Architectural Accrediting Board (NAAB). It leads to the degree of Master of Architecture, which qualifies graduates to take the state professional licensing examination after completing the required internship in an architectural office.

**Programs of Study**

There are three program options at the Master of Architecture level. Options 1, 2, and 3 differ according to the bachelor's degree received prior to entering the graduate program.

### Option 1: Seven-Semester Program

Option 1 is offered to individuals who hold a four-year undergraduate degree with a major in a field other than architecture. Preference for admission is given to those who have completed a balanced education in the arts, sciences, and humanities. A minimum of two semesters of college-level courses in the history of art and/or architecture are recommended; so is a minimum of one semester of college-level courses in mathematics and physics. Previous preparation in the visual arts is also desirable and so are courses in philosophy, literature, and economics.

In order to graduate, students must complete a four-semester core curriculum (76 credit hours), which is followed by a three-semester advanced curriculum (57 credit hours). Course work in both core and advanced curricula consists of 7 studios (including thesis) and 20 distribution courses (133 credit hours).

#### Core Curriculum

##### *First Semester*

- ARCH 501 *Core Design Studio I*
- ARCH 507 *Introduction to Design of Structures II*
- ARCH 633 *Introduction to Computer Applications in Architecture*
- ARCH 685 *Architecture and Society*

##### *Second Semester*

- ARCH 502 *Core Design Studio II*
- ARCH 514 *Design of Structures II*
- ARCH 636 *Computer Aided Design in Architecture*
- ARCH 686 *Architecture and Society II*

##### *Third Semester*

- ARCH 503 *Core Design Studio III*
- ARCH 515 *Design of Structures III*
- ARCH 683 *20th-Century History of Ideas in Architecture*
- Dist. Elective (Comp., Log., and Repr.)

##### *Fourth Semester*

- ARCH 504 *Core Design Studio IV*
- ARCH 516 *Building Climatology*
- ARCH 623 *Professionalism and Manag. in Architecture*
- Dist. Elective (Hist., Theory, and Crit.)

#### Advanced Curriculum

##### *Fifth Semester*

- ARCH 601 *Architectural Problems*
- Dist. Elective (Hist., Theory, and Crit.)
- Dist. Elective (Comp., Log., and Repr.)
- Elective

##### *Sixth Semester*

- ARCH 602 *Architectural Problems*
- ARCH 702 *Pre-Thesis Preparation*
- Dist. Elective (Struct., Pract., and Env. )
- Elective

##### *Seventh Semester*

- ARCH 703 *Thesis Studio* or equivalent
- Elective
- Elective

## Option 2: Five-Semester Program

Option 2 is offered to individuals who hold a four-year undergraduate degree with a major in architecture. Preference for admission is given to those who have successfully completed between four and six semesters of undergraduate design studio as well as undergraduate courses that are analogous to those given in the first year of Option 1. A minimum of two semesters of college-level courses in the history of art and/or architecture are recommended; so is a minimum of one semester of college-level courses in mathematics and physics.

Students in this program enter into the second year of the core curriculum (two semesters, 38 credit hours), followed by the advanced curriculum (three semesters, 57 credit hours). Course work in both core and advanced curricula consists of 5 studios (including thesis) and 14 distribution courses (96 credit hours).

### Core Curriculum

#### First Semester

ARCH 503 *Core Design Studio III*

ARCH 515 *Design of Structures III*

ARCH 683 *20th-Century History of Ideas  
in Architecture*

Dist. Elective (Comp., Log., and Repr.)

#### Second Semester

ARCH 504 *Core Design Studio IV*

ARCH 516 *Building Climatology*

ARCH 623 *Professionalism and Manag.  
in Architecture*

Dist. Elective (Hist., Theory, and Crit.)

\*or an approved alternative

### Advanced Curriculum

#### Third Semester

ARCH 601 *Architectural Problems*

Dist. Elective (Hist., Theory, and Crit.)

Dist. Elective (Comp., Log., and Repr.)  
Elective

#### Fourth Semester

ARCH 602 *Architectural Problems*

ARCH 702 *Pre-Thesis Preparation*

Dist. Elective (Struct., Pract., and Env.)  
Elective

#### Fifth Semester

ARCH 703 *Thesis Studio\**

Elective

Elective

## Option 3: Three-Semester Program

Option 3 is offered to individuals who hold a professional degree in architecture (B.Arch.), or its equivalent from a foreign university. Preference for admission is given to those who have significant practical experience in architecture and who have demonstrated high achievement in design.

In order to graduate, students must complete a three-semester advanced curriculum of elective courses. Course work consists of 3 studios (including thesis) and 8 distribution courses (57 credit hours).

### First Semester

ARCH 601 *Architectural Problems*

Dist. Elective (Hist., Theory, and Crit.)

Dist. Elective (Comp., Log., and Repr.)

Elective

### Second Semester

ARCH 602 *Architectural Problems*

ARCH 702 *Pre-Thesis Preparation*

Dist. Elective (Struct., Pract., and Env.)

Elective

\*or an approved alternative

### Third Semester

ARCH 703 *Thesis Studio\**

Elective

Elective

## Thesis Requirement

All M.Arch. candidates are required to develop a thesis in partial fulfillment of graduate degree requirements. Students are asked to demonstrate their ability to independently undertake research and analysis as well as develop a hypothesis and a thorough demonstration of the thesis. This must take the form of either a research thesis (written thesis) or a thesis with a design demonstration (design thesis). Both thesis formats must address architectural consequences that may be derived from within or outside conventional boundaries of the architectural discipline.

Thesis preparation begins in the penultimate semester with a 3-hour independent study course leading to the submission of a thesis proposal and the selection of a thesis director plus two faculty members as readers. While the thesis is independent work carried out by the student under the direction of a chosen adviser, it is organized as a studio in the fall term of the academic year. The thesis studio provides a support setting for both formal and informal review processes throughout the thesis semester. In early January, thesis projects are reviewed by a panel of guest critics and publicly presented in the Farish Gallery.

## Master of Architecture in Urban Design

The Master of Architecture in Urban Design (MAUD) program prepares graduates for a full range of professional activities in the field of urban design. It is offered to individuals who already hold a professional degree qualifying them for registration as architects or landscape architects. The MAUD program makes extensive use of Houston as a setting for case studies and design problems. During the first year, strong emphasis is given to developing design skills, logic, and imagination through an intensive series of urban design studio courses. Three additional courses in urban history, planning, and design are required each semester. Students are also required to prepare an independent thesis during their third semester.

## Doctor of Architecture

Admission to the Doctor of Architecture program requires either a bachelor's or master's degree in architecture and a detailed statement of research concerns and anticipated array of investigation. A student entering with a master's degree normally takes three semesters of course work before the qualifying examination. A student with a bachelor's degree normally requires two to five semesters of course work before the qualifying examination. Preparation for doctoral candidacy may include a foreign language or computer skills. Specific course requirements are established individually when a student is admitted to the program.

After successful completion of all required course work, students may apply to take the qualifying examination after submitting a prospectus outlining their research programs for the doctoral dissertation. The dissertation must represent an original contribution to knowledge in the field of architecture. Completion and successful defense of the dissertation will take a minimum of one year. University requirements for thesis (dissertation) preparation and defense must be carefully followed. The time limit for successful defense of the dissertation is established by university policy. Students should not expect to complete the doctor of architecture program in less than four years of full-time study.

**See ARCH (pages 250–257) in the Courses of Instruction section.**

# Art and Art History

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## The School of Humanities

### Chair

Hamid Naficy

### Professors

Karin L. Broker  
 William A. Camfield  
 Joseph Manca  
 Hamid Naficy  
 Basilios N. Poulos  
 George Smith  
 Geoffrey L. Winningham

### Associate Professors

Brian Michael Huberman  
 Darra Keeton  
 Linda E. Neagley  
 Todd Porterfield  
 John Sparagana

### Assistant Professors

Marcia Brennan

### Distinguished Lecturer

Thomas McEvelley

### Visiting Lecturer

Prince Thomas

### Adjunct Lecturer

Heather Logan

*Degrees Offered:* B.A., B.F.A.

This major offers two tracks of study: one in studio art and one in art history, the latter with concentrations in the Western tradition of European and American art. Courses include listings in studio art, film, and photography (ARTS), history of art listings in both art and architecture and film and media studies (HART).

## Degree Requirements for B.A. in Art and Art History

For general university requirements, see Graduation Requirements (pages 16–18). Students majoring in art and art history must complete 12 departmental courses (36 to 38 semester hours, depending on certain course options). At least half of these courses must be at the 300 or 400 level, and students must take more than half of them at Rice.

**Studio Art Track.** Course selection in this track is subject to prerequisites and consultation with the studio faculty adviser. Students in the studio art track must take:

- 10 courses in studio art
- 2 courses in the history of art

**Art History Track.** The department recommends that course work include HART 390 Theoretical Perspectives on the Visual Arts and that course work taken outside the department include a foreign language. Students in the art history track must take:

- 10 courses in the history of art, with some chronological distribution, including:
  - HART 101/102 *Introduction to the History of Art I and II*
  - 1 non-western art course
  - At least 1 seminar
- 2 courses in studio art

**Double Majors.** Double majors must also select one track. These students must take at least 10 departmental courses. Those in the studio art track take 8 courses in studio art and 2 courses in the history of art. Those in the art history track take 8 courses in the history of art (including HART 101/102 Introduction to the History of Art and a non-Western art course) and 2 courses in studio art.

### **Degree Requirements for B.F.A.**

Students with a B.A. degree in art from Rice or an equivalent degree from another university may enter the Bachelor of Fine Arts (B.F.A.) program, which consists of a fifth year of intensive study in the creative arts. Students with a B.A. in a major other than art may, in exceptional cases, be admitted. Information about application forms, deadlines, and admission standards is available from the chair of the department.

For the B.F.A. degree, students must complete a total of 30 semester hours in approved courses, or the equivalent in approved major electives, at the 300 level or above. In addition to the usual departmental upper-level courses, special fifth-year courses are offered for B.F.A. candidates only.

### **Degree Requirements for M.A. in Art History**

Owing to a high number of vacant positions in the art history section, the master's program has been placed on hold for several years until those positions have been filled. Resumption of the graduate program is anticipated as soon as the faculty are in place.

### **Exhibitions and Arts Programs at Rice**

Exhibitions and related activities organized by **Rice University Art Gallery** (Kimberly Davenport, director) enrich the teaching program of the Department of Art and Art History as well as the larger university and Houston community. The **Rice Media Center** mounts several photography exhibitions each year and sponsors the "Rice Cinema" film series, a public film program. Featured films include classic and contemporary titles, independent and experimental films, documentaries, and alternative cinema programs. The film series, which is intimately connected with the curriculum both in film and media studies and in film and photography production, includes frequent guest lecturers, panel discussions, and media events.

**See ARTS (pages 258–262) and HART (pages 374–383) in the Courses of Instruction section.**

## Asian Studies

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### The School of Humanities and the School of Social Sciences

#### Director

Richard J. Smith

#### Professors

Anne C. Klein

Benjamin Lee

Stephen A. Tyler

#### Professor Emeritus

Fred R. von der Mehden

#### Associate Professor

Suchan Chae

#### Assistant Professors

Nanxiu Qian

Elora Shehabuddin

Sarah Thal

#### Senior Lecturers

Lilly C. H. Chen

Hiroko Sato

#### Lecturers

David Gray

Marshall McArthur

E. Douglas Mitchell

Steven Lewis

Rina V. Williams

Insun Yang

Meng Yeh

#### *Degree Offered: B.A.*

Asian studies is an interdisciplinary major that explores the complex interaction between political, social, religious, and other important spheres of human life in Asia. Emphasis is placed not only on the diversity and achievements of Asian civilizations but also on the ways an understanding of Asia may shed new light on Western cultural traditions. The major is built around courses in the humanities and social science divisions and a team-taught interdisciplinary core course, Introduction to Asian Civilizations. Some “Residential College Courses” may qualify for Asian studies credit.

Requirements: The undergraduate Asian studies major will consist of 30 hours or more of course work. All majors must take the core course, HUMA 211, and 9 additional courses drawn from at least three of the departments offering courses in Asian studies. (See specific guidelines below.)

#### **Degree Requirements for B.A. in Asian Studies**

For general university requirements, see Graduation Requirements (pages 16–18). Students majoring in Asian studies must complete 30 semester hours or more of major course work, including:

- HUMA 211 *Introduction to Asian Civilizations*
- 9 additional courses drawn from at least three of the departments offering courses in Asian studies (see below)
- 6 courses at the 300 level or above
- 2 years of Asian language (this may include Asian languages other than those offered by Rice), though students may count no more than four semesters of Asian languages toward the major.

Any changes in the requirements for the major must be approved by the director of Asian studies.



One or more independent reading courses (ASIA 401 for the fall and ASIA 402 for the spring) taught by Asian studies faculty in these departments may be counted toward the major. Students may also use certain residential college courses to fulfill their major requirements, subject to the approval of the director of Asian studies.

The following courses, not all of which are taught every year, may be used to satisfy the major requirements. Note that a number of these courses are cross-listed.

### **Anthropology**

ANTH 220 *Contemporary China* (also offered as HIST 220)

ANTH 310 *Contemporary China* (enriched version of ANTH 220; also offered as HIST 310)

ANTH 353 *Cultures of India*

### **Asian Studies**

ASIA 139 *Introduction to Indian Religions* (also offered as RELI 139)

ASIA 140 *Introduction to Chinese Religions* (also offered as RELI 140)

ASIA 211 *Introduction to Asian Civilizations*

ASIA 250 *Meditation, Mysticism, and Magic* (also offered as RELI 250)

ASIA 280 *The Asian American Experience* (also offered as ENGL 280)

ASIA 299 *Women in Chinese Literature* (also offered as CHIN 299 and WGST 299)

ASIA 330 *Introduction to Traditional Chinese Poetry* (also offered as CHIN 330)

ASIA 332 *Chinese Films and Modern Chinese Literature* (also offered as CHIN 332)

ASIA 333 *Taiwan Literature and Film* (also offered as CHIN 333)

ASIA 334 *Introduction to Traditional Chinese Narrative* (also offered as CHIN 334)

ASIA 335 *Introduction to Classical Chinese Literature* (also offered as CHIN 335)

ASIA 344 *Korean Literature* (also offered as HUMA 344 and KORE 344)

ASIA 345 *Origin and Development of Korean and Related Languages in East Asia* (also offered as HUMA 345 and KORE 345)

ASIA 346 *Korean Culture and History* (also offered as KORE 346)

ASIA 380 *The Asian American Experience* (also offered as ENGL 359)

ASIA 360 *Transnational China: China and the Chinese Diaspora*

ASIA 401 and 402 *Independent Reading*

### **Chinese**

CHIN 101 and 102 *Introduction to Chinese Language and Culture I and II*

CHIN 201 and 202 *Introduction to Chinese Language and Culture III and IV*

CHIN 211 and 212 *Accelerated Chinese Language and Culture I and II*

CHIN 299 *Women in Chinese Literature* (also offered as ASIA 299 and WGST 299)

CHIN 301 and 302 *Intermediate Chinese Language and Culture I and II*

CHIN 311 and 312 *Intermediate Accelerated Chinese Language and Culture I and II*

CHIN 330 *Introduction to Traditional Chinese Poetry* (also offered as ASIA 330)

CHIN 332 *Chinese Films and Modern Chinese Literature* (also offered as ASIA 332)

CHIN 333 *Taiwan Literature and Film* (also offered as ASIA 333)

CHIN 334 *Introduction to Traditional Chinese Narrative* (also offered as ASIA 334)

CHIN 335 *Introduction to Classical Chinese Literature* (also offered as ASIA 334)

CHIN 346 *History of the Chinese Language* (also offered as LING 346)

CHIN 399 *Women in Chinese Literature* (also offered as ASIA 299 and WGST 399)

CHIN 411 and 412 *Advanced Chinese Language and Culture I and II*

CHIN 431 and 432 *Readings in Classical Chinese Literature*

**English**

- ENGL 270 *Aspects of Modern Literature: Contemporary Themes in Asian American Literature*  
 ENGL 280 *The Asian American Experience* (also offered as ASIA 280)  
 ENGL 359 *The Asian American Experience* (also offered as ASIA 380)

**History**

- HIST 219 *Patterns of the Chinese Past*  
 HIST 220 *Contemporary China* (also offered as ANTH 220)  
 HIST 221 *Japanese History I: Early Japan to the Age of the Samurai*  
 HIST 222 *Japanese History II: Modern Japan*  
 HIST 250 *Traditional Chinese Culture*  
 HIST 310 *Contemporary China* (enriched version of HIST 220; also offered as ANTH 310)  
 HIST 341 *Pre-modern China*  
 HIST 342 *Modern China*  
 HIST 352 *The Comparative Modernization of China and Japan*  
 HIST 369 *Film, Literature and the Japanese Past*  
 HIST 405 *Issues in Comparative History*  
 HIST 421 *Japanese History I: Early Japan to the Age of the Samurai* (enriched version of HIST 221)  
 HIST 422 *Japanese History II: Modern Japan* (enriched version of HIST 222)  
 HIST 448 *Creating Modern Japan: The Meiji Restoration*  
 HIST 449 *Nation, Empire, and War: Japan in the 1930s*  
 HIST 450 *Traditional Chinese Culture* (enriched version of HIST 250)

**Japanese**

- JAPA 101 and 102 *Introduction to Japanese Language and Culture I and II*  
 JAPA 201 and 202 *Intermediate Japanese Language and Culture I and II*  
 JAPA 301 and 302 *Advanced Japanese Reading and Composition I and II*

**Korean**

- KORE 101 and 102 *Introduction to Korean Language and Culture I and II*  
 KORE 201 and 202 *Intermediate Korean Language and Culture I and II*  
 KORE 301 and 302 *Advanced Korean I and II*  
 KORE 344 *Korean Literature and Culture* (also offered as ASIA 344 and HUMA 344)  
 KORE 345 *Origin and Development of Korean and Related Languages in East Asia* (also offered as LING 345 and ASIA 345)  
 KORE 346 *Korean Culture and History* (also offered as ASIA 346)

**Linguistics**

- LING 345 *Linguistic Structure of Korean* (also offered as KORE 345)  
 LING 346 *History of the Chinese Language* (also offered as CHIN 346)  
 LING 351 and 352 *Introduction to Sanskrit I and II* (also offered as SANS 301 and 302)  
 LING 440 *The Chinese Novel*  
 LING 443 *Topics in Chinese Linguistics*

**Political Science**

- POLI 351 *Politics of Southeast Asia*  
 POLI 460 *Seminar in Comparative Government*

**Religious Studies**

- RELI 132 *Classical and Colloquial Tibetan* (also offered as TIBT 132)  
 RELI 139 *Introduction to Indian Religions* (also offered as ASIA 139)  
 RELI 140 *Introduction to Chinese Religions* (also offered as ASIA 140)  
 RELI 250 *Meditation, Mysticism, and Magic* (also offered as ASIA 250)  
 RELI 322 *Introduction to Buddhism*  
 RELI 325 *Buddhism and the Female*  
 RELI 470 *Buddhist Wisdom Texts*  
 RELI 471 *Buddhist Meditation Theory: Women and Men*  
 RELI 532 *Classical and Colloquial Tibetan* (also offered as TIBT 132)  
 RELI 570 *Buddhist Wisdom Texts* (graduate version of RELI 470)

RELI 571 *Buddhist Meditation Theory: Women and Men* (graduate version of RELI 471)

RELI 572 *Introduction to Buddhism* (graduate version of RELI 322)

**Sanskrit**

SANS 301 and 302 *Elementary Sanskrit I and II* (also offered as LING 351 and 352)

**Tibetan**

TIBT 132 *Classical and Colloquial Tibetan* (also offered as RELI 132)

TIBT 532 *Classical and Colloquial Tibetan* (also offered as RELI 532)

**University and Residential College Courses**

JONE 311 *Indian Society and Politics*

UNIV 118 *The Classic of Changes (I Ching) in Asian and World Culture*

**Women and Gender Study**

WGST 299 *Women in Chinese Literature* (also offered as ASIA 299 and CHIN 299)

WGST 399 *Women in Chinese Literature* (also offered as ASIA 399 and CHIN 399)

**See ASIA (pages 262–265) in the Courses of Instruction section.**

# Bioengineering

## George R. Brown School of Engineering

### Chair

Larry V. McIntire

### Professors

Kyriacos Athanasiou

John W. Clark

David Hellums

Antonios G. Mikos

Ka-Yiu San

Kyriacos Zygorakis

### Associate Professors

Fathi Ghorbel

Lydia Kaviraki

Jennifer L. West

### Assistant Professors

Bahman Anvari

Michael A. Barry

Michael Liebschner

Jianpeng Ma

### Adjunct Professors

William Brownell

Craig J. Hartley

José A. López

Joel L. Moake

Andrew Schafer

David Sears

C. Wayne Smith

Kenneth Wu

### Adjunct Associate Professors

Gregory R. D. Evans

Michael H. Kroll

Michael Miller

Charles W. Patrick

Peter Saggau

Mark M. Udden

Alan W. Yasko

Michael Yaszemski

### Adjunct Assistant Professors

Daniel E. Epner

Seongbong Jo

Jan F. M. Post

### Lab Coordinator/ Research Engineer

Ann Saterbak

### Senior Faculty Fellow

Suzanne G. Eskin

### Faculty Fellow

Jorge Torres

### Lecturer

George Zouridakis

*Degrees offered: B.S., M.S., Ph.D.*

Graduate and undergraduate programs in bioengineering offer concentrations in areas that include cellular and molecular engineering, systems engineering and instrumentation, or biomaterials and biomechanics. Research areas include biochemical engineering, biological systems modeling, biomaterials, biomedical lasers, cellular and molecular engineering, controlled release technologies, metabolic engineering, phytoremediation, spectroscopy, systems engineering and instrumentation, thrombosis, tissue engineering, and transport processes.

**Undergraduate Program.** The bioengineering undergraduate program will prepare students for careers in rapidly developing areas of biomedical engineering and bioprocessing. Our unified and comprehensive program leading to the B.S. degree in bioengineering will:

- Build a solid engineering background for our students and equip them with advanced analytical, computational, and experimental skills
- Provide them with a fundamental understanding of the life and medical sciences
- Develop their ability to participate in interdisciplinary teams with molecular and cell biologists, or medical scientists

Undergraduates in bioengineering will then have the training to pursue further education in graduate school or medical school or will have strong preparation for a career in the biotechnology industry.

The B.S. degree is organized around a core of required courses and a selection of elective courses from three specialization areas. The specialization electives provide a flexibility that can be used to create a focus in cellular and molecular engineering, systems engineering and instrumentation, or biomaterials and biomechanics. Because of the number of options, students should consult early with departmental advisers to plan a program that meets their needs.

### **Degree Requirements for the B.S. Degree in Bioengineering**

For general university requirements, see Graduation Requirements (pages 16–18). The curriculum for a B.S. degree in bioengineering requires 94 credit hours, which count toward the total of 134 hours required to graduate.

**Preparation.** Students considering a major in bioengineering should take as freshmen MATH 101 and 102 Single Variable Calculus I and II, CHEM 121 and 122 General Chemistry, PHYS 101 (or PHYS 111) or PHYS 125 Mechanics, PHYS 102 (or PHYS 112) or PHYS 126 Electricity and Magnetism, and CAAM 210 or CAAM 211 Introduction to Engineering Computation. Sophomore students should take MATH 211 and 212, CHEM 211, 212, 215, BIOS 201, and either MECH 211 or ELEC 243. BIOE 252 Bioengineering Fundamentals should be taken in the first semester of the sophomore year.

**Concentration Areas.** Students in the B.S. program will choose courses from three specialization areas:

- Cellular and molecular engineering
- Systems engineering and instrumentation
- Biomaterials and biomechanics

Students majoring in bioengineering must complete the following courses.

#### **Core Courses**

##### ***Bioengineering***

BIOE 252 *Bioengineering Fundamentals*

BIOE 322 *Systems Physiology*

BIOE 342 *Tissue Culture Laboratory*

BIOE 372 *Introductory Biomechanics/  
Biomaterials*

BIOE 420 *Biosystems Transport and  
Reaction Processes*

BIOE 441 *Senior Bioengineering  
Laboratory*

BIOE 452 *Bioengineering Design*

##### ***Biosciences***

BIOS 201 *Introductory Biology*

BIOS 301 *Biochemistry*

BIOS 311 or 312 (1 hour) *Laboratory  
Module*

BIOS 341 *Cell Biology*

##### ***Computational and Applied Mathematics***

CAAM 210 or CAAM 211 *Introduction  
to Engineering Computation*

CAAM 335 or CAAM 336 *Foundations  
of Applied Math*

##### ***Chemical Engineering***

CENG 411 *Thermodynamics*

##### ***Chemistry***

CHEM 121 *General Chemistry*

CHEM 122 *General Chemistry*

CHEM 211 *Organic Chemistry*

CHEM 212 *Organic Chemistry*

CHEM 215 *Organic Chemistry  
Laboratory*

**Math**

MATH 101 *Single Variable Calculus I*  
 MATH 102 *Single Variable Calculus II*  
 MATH 211 *ODEs and Linear Algebra*  
 MATH 212 *Multivariable Calculus*

**Physics**

PHYS 101 or PHYS 111 or PHYS 125  
*Mechanics*  
 PHYS 102 or PHYS 112 or PHYS 126  
*Electricity and Magnetism*

**Other Engineering**

ELEC 243 or MECH 211 *Circuits  
 and Electronics or Engineering  
 Mechanics*

Please note that some of these courses may not be listed in the course listings section of this publication. As these courses become available, they will be listed in the schedule of courses.

**Specialization Areas**

Five bioengineering-area elective courses, at least 3 of which must be at the senior level, will be required in one of the three areas:

- Cellular and molecular engineering
- Systems engineering and biomedical instrumentation
- Biomaterials and biomechanics

The elective courses in these concentration areas will be announced in future course listings.

**Graduate Program.** The bioengineering graduate program at Rice educates its students so that they can directly interact with physicians and cell and molecular biologists, while still excelling in the quantitative capabilities so important for engineering applications.

**Degree Requirements for the M.S. and Ph.D. Degrees in Bioengineering**

For general university requirements, see Graduate Degrees (pages 60-65).

**M.S. Program.** Candidates for the M.S. degree must:

- Complete at least 18 semester hours of foundation, supporting, and advanced courses with high standing
- Fulfill a teaching requirement
- Submit an original research thesis
- Defend the thesis in a public oral examination

**Ph.D. Program.** Candidates for the Ph.D. degree must:

- Complete at least 36 approved semester hours of foundation, supporting, and advanced courses, with high standing. With departmental approval, the course requirements may be reduced to not less than 22 hours for students already holding an M.S. degree.
- Fulfill a teaching requirement. After their first two semesters in residence, students may be asked to spend the equivalent of 6 to 10 hours per week for a total of three semesters on teaching assignments.

- Pass the Ph.D. qualifying examinations. All Ph.D. students must pass the Ph.D. qualifying examinations usually given during the first year of study. The qualifying examinations are comprehensive tests on the knowledge acquired in the bioengineering foundation courses.
- Submit a thesis proposal. Ph.D. students must submit and successfully defend their thesis proposals by the end of their fifth semester in residence.
- Complete a three to six month industrial internship. This requirement may be waived for those with adequate previous industrial experience.
- Submit a thesis that provides evidence of their ability to carry out original research in a specialized area of bioengineering.
- Defend the thesis in a public oral examination.

Graduate students take required courses and electives in the following areas:

- Cellular and molecular engineering
- Systems engineering and instrumentation
- Biomaterials and biomechanics

**See BIOE (pages 267–271) in the Courses of Instruction section.**

## Biosciences

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### Biochemistry and Cell Biology

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#### The Wiess School of Natural Sciences

##### Chair

Frederick B. Rudolph

##### Professors

Kathleen Beckingham  
 George N. Bennett  
 Zenaido Camacho  
 Raymon M. Glantz  
 Richard H. Gomer  
 Jordan Konisky  
 Kathleen Shive Matthews  
 John Steven Olson  
 George N. Phillips, Jr.  
 Charles R. Stewart

##### Professors Emeriti

James Wayne Campbell  
 Graham Palmer  
 James B. Walker

##### Associate Professors

Janet Braam  
 Susan L. Gibson  
 Michael C. Gustin  
 Seiichi P.T. Matsuda  
 Edward P. Nikonowicz  
 Michael Stern

##### Assistant Professors

Bonnie Bartel  
 Kevin R. MacKenzie  
 Mary Ellen Lane  
 James A. McNew  
 Yousif Shamoo  
 Scott F. Singleton

##### Lecturers/Laboratory

##### Coordinators

Beth Beason-Armendarez  
 David R. Caprette  
 Alma Novotny

##### Adjunct Professor

Florante A. Quiucho

##### Distinguished Faculty Fellow

Quentin H. Gibson

##### Faculty Fellow

Marian Fabian

## Ecology and Evolutionary Biology

---

#### The Wiess School of Natural Sciences

##### Chair

Ronald L. Sass

##### Professors

Frank M. Fisher, Jr.  
 Paul A. Harcombe  
 David C. Queller  
 Joan E. Strassmann  
 Calvin H. Ward

##### Professors Emeriti

Charles Philpott  
 Stephen Subtelny

##### Assistant Professors

Lisa Meffert  
 Evan Siemann

##### Adjunct Assistant Professors

Rosine Hall  
 Nancy Grieg

##### Huxley Fellows

Kevin Foster  
 William Rogers

##### Lecturer/Laboratory

##### Coordinator

Barry Sullender



*Degrees Offered:* B.A., M.A., Ph.D.

The undergraduate curriculum in the biosciences is administered jointly by two departments: the Department of Biochemistry and Cell Biology and the Department of Ecology and Evolutionary Biology. This curriculum offers majors in biochemistry and in biology. Courses in the biosciences include animal behavior, animal biology, biochemistry, biophysics, cell biology, developmental biology, ecology, endocrinology, evolutionary biology, genetics, immunology, microbiology, molecular biology, neurobiology, and plant biology.

The graduate programs in biochemistry and cell biology focus on topics in biochemistry, biophysics, cell biology, development, genetics, molecular biology, and neurobiology. In the ecology and evolutionary biology program, the focus is on behavior, biogeochemistry, molecular evolution, plant community ecology, population biology, sociobiology, and wetland ecosystems.

### **Degree Requirements for B.A. in Biosciences**

For general university requirements, see Graduation Requirements (pages 16–18). Students majoring in biosciences must complete at least 48 semester hours of courses at the 300 level or higher. The total semester hours at graduation should be at least 129 hours (128 hours if students choose the PHYS 101/102 option, and 132 hours if they choose the MATH 111/112 option). All biosciences majors must complete the following:

#### **Mathematics**

MATH 101/102 *Single Variable Calculus I and II*  
MATH 211 *Ordinary Differential Equations and Linear Algebra*

#### **Chemistry**

CHEM 121/122 *General Chemistry with Laboratory*  
CHEM 211/212 *Organic Chemistry*  
CHEM 213/214 *Organic Chemistry Lab*

#### **Physics**

PHYS 125/126 *General Physics I and II*

#### **Biosciences**

BIOS 201/202 *Introductory Biology*  
BIOS 301 *Biochemistry*  
BIOS 211 *Introductory Lab in Biological Sciences* (2 credit hours)  
BIOS 213 *Introductory Lab in Ecology and Evolutionary Biology*  
BIOS 311 *Lab in Protein Purification*

#### **Any 2 of the following advanced laboratory courses:**

BIOS 312 *Lab Module in Molecular Biology I*  
BIOS 313 *Lab Module in Molecular Biology II*  
BIOS 314 *Lab in Cell and Developmental Biology*  
BIOS 315 *Lab in Physiology*  
BIOS 316 *Lab in Ecology*  
BIOS 317 *Lab in Behavior*  
BIOS 318 *Lab in Microbiology*  
BIOS 319 *Tropical Field Biology*  
BIOS 530 *NMR Spectroscopy and Molecular Modeling*  
BIOS 532 *Spectroscopy*  
BIOS 533 *Computational Biology*  
BIOS 535 *Practical X-Ray Crystallography*

**Options.** One of the advanced laboratory course requirements may be satisfied by taking any of the following: (1) STAT 305 (if used to satisfy a lab requirement, this may not also be used to satisfy a lecture course requirement); or (2) BIOS 310, if taken for at least 2 credits; or (3) HONS 470/471, if the research supervisor is from one of the biosciences departments or if the research is biological in nature and preapproved by the student's adviser; or (4) BIOS 401/402, one semester may be used to meet an advanced

laboratory course requirement, and the other semester may be used to meet the requirement for a group A or B course, as discussed below). Students may substitute MATH 111 Fundamental Theorem of Calculus and MATH 112 Calculus and its Applications for MATH 101. They may substitute CHEM 151/152 Principles of Chemistry for CHEM 121/122. Although PHYS 125 and 126 are the preferred physics courses for biosciences majors, students who want to keep open the option of a different major may satisfy the physics requirement by taking PHYS 101 or 111 Mechanics and PHYS 102 or 112 Electricity and Magnetism (with their respective labs).

**Course Sequence.** Students should take the 100-level mathematics and chemistry courses in their freshman year, the 100-level physics courses and the 200-level biosciences courses in either their freshman or their sophomore year, and the 200-level chemistry courses in their sophomore year. Those with a limited background in chemistry should complete CHEM 121/122 before taking BIOS 201/202. Taking BIOS 201/202 while freshmen gives students earlier access to upper-level courses, and is recommended for students with sufficient chemistry preparation.

**Undergraduate Research.** Undergraduate majors are encouraged, but not required, to pursue independent supervised research in BIOS 401/402 Undergraduate Honors Research; those who do must register concurrently in BIOS 411/412 Undergraduate Research Seminar and complete a thesis. Students may also undertake research projects in BIOS 310 Undergraduate Independent Study and HONS 470/471. See Honors Programs (page 33).

**Biochemistry Major.** Students majoring in biochemistry must take the following in addition to those required of all biosciences majors. See listings in the Courses of Instruction section for Group A and B designations.

- BIOS 352 *Physical Chemistry for Biosciences*  
or CHEM 311/312 *Physical Chemistry*
- BIOS 302 *Biochemistry*
- BIOS 341 *Cell Biology*
- BIOS 344 *Molecular Biology and Genetics*.
- 1 additional bioscience course from Group A

Students may substitute 1 semester of honors research, BIOS 401 or 402, for 1 of the elective courses from Group A if their faculty supervisor is from the Department of Biochemistry and Cell Biology. Biochemistry majors are assigned an adviser from the biochemistry and cell biology department.

**Biology Major.** Students majoring in biology must take the following in addition to the courses that are required of all biosciences majors (see listings in the Courses of Instruction section for Group A and B designations):

- 2 biosciences courses from Group A
- 1 biosciences course from Group B
- 4 additional biosciences courses from Groups A and/or B

Students may substitute STAT 305 Introduction to Statistics for Biosciences for one of the last 4 courses provided that STAT 305 has not been used to satisfy a lab requirement.

Students may also substitute 1 semester of honors research, BIOS 401 or 402, for one of the courses from Group A, if their faculty supervisor is from the Department of Biochemistry and Cell Biology, or from Group B, if their supervisor is from the Department of Ecology and Evolutionary Biology. The recommended courses for those taking a limited number of Group A courses are BIOS 302 Biochemistry, BIOS 341 Cell Biology, BIOS 344 Molecular Biology and Genetics, and BIOS 352 Physical Chemistry for Biosciences.

Students may specialize in ecology and evolutionary biology or in cell and molecular biology by choosing the 4 additional biosciences courses from Group B or from Group A, respectively. Specialization is not required, and students may switch from one to another if they wish. Biology majors are assigned an adviser from one of the two biosciences departments according to their specialization; those electing a general biology program may request advisers from either department. Students interested in environmental careers should consult with the ecology and evolutionary biology department for a list of recommended courses. See also Environmental Program listings (pages 162–173) and Environmental Science Double Major (pages 121–122).

### **Admission Requirements for Accelerated B.A./Ph.D. Program in Biochemistry and Cell Biology**

Qualified undergraduates at Rice may apply for admission to the biochemistry and cell biology graduate program in their senior year. This allows them to complete certain course requirements for graduate studies at the same time as their upper-level undergraduate degree requirements; laboratory research performed as part of their undergraduate thesis project can serve as the initial phases of their Ph.D. thesis work. Students thus should be able to obtain their Ph.D. degree more quickly—approximately three years after earning their B.A. degree.

Criteria for admission include academic performance (grade point average of 3.30 or higher), high scores on the Graduate Record Examination (GRE), motivation, previous research experience, and personal qualities. The department Graduate Admissions Committee makes the selection.

Interested students must complete two and one-half years (or their equivalent) of undergraduate studies at Rice before applying for enrollment in the accelerated B.A./Ph.D. program. To continue in the program, they must:

- Take the GRE before receiving the B.A. degree and earn scores greater than 80 percent in the analytical and quantitative tests
- Maintain a B average in all courses in their senior year

The usual graduate requirements will apply for continuation in the program.

### **Degree Requirements for M.A. and Ph.D. in Biochemistry and Cell Biology**

**Admission.** Applicants for graduate study in the Department of Biochemistry and Cell Biology must have:

- B.A. degree in biochemistry, biology, chemistry, chemical engineering, physics, or some equivalent
- Strong ability and motivation, as indicated by academic record, Graduate Record Examination (GRE) scores, and recommendations

Although the department offers an M.A. degree in biochemistry and cell biology, only on rare occasions are students who do not intend to pursue the Ph.D. degree admitted to the graduate program. The department provides a program guide titled “Graduate Program for Biochemistry and Cell Biology,” which is updated annually. For general university requirements, see Graduate Degrees (pages 60–65).

**Both Ph.D. and M.A. Programs.** Most of the formal course studies will be completed in the first year of residence to allow the students to commence thesis research at the end of their second semester at Rice. During the first year, all graduate students will be advised by the Graduate Advisory Committee (current composition: Braam, Gustin, Shamoo, and Stern). This committee will determine the formal course program to be taken during the first year in residence. Students are required to have training in

biochemistry, cell biology, genetics, and physical chemistry or biophysics. If students are missing formal training in these subjects, they are required to take the equivalent background courses during their first year. The corresponding courses at Rice include the following:

BIOS 301 *Biochemistry*  
 BIOS 302 *Biochemistry*  
 BIOS 311, 312, 313 *Laboratories for the Biosciences*  
 BIOS 341 *Cell Biology*  
 BIOS 344 *Molecular Biology and Genetics*  
 BIOS 352 *Physical Chemistry for the Biosciences*

**All Ph.D. students are required to take the following graduate-level courses:**

BIOS 575 *Introduction to Research*  
 BIOS 581, 582 *Graduate Research Seminars*  
 BIOS 583 *Molecular Interactions*  
 BIOS 587 *Research Design, Proposal Writing, and Professional Development*

BIOS 800 *Graduate Research* (rotations in first year)  
 UTHSC GS210051 *Ethical Dimensions of the Biomedical Sciences*

**Students must also take 2 units from the following set of advanced courses:**

BIOS 525 *Plant Molecular Biology* (1 unit)  
 BIOS 530, 532, 533, 535 *Graduate Laboratory Modules in Molecular Biophysics* (1/2 unit each)  
 BIOS 545 *Advanced Molecular Biology and Genetics* (1 unit)  
 BIOS 588 *Advanced Cell and Developmental Biology* (1 unit)

Students should complete BIOS 583 and BIOS 587 in their first and second years, respectively, and they will be responsible for the content of those course programs in their admission to candidacy examination (see below). Students also gain teaching experience by serving as discussion leaders and graders in undergraduate sections during their second year. Safety and ethics presentations are provided for first-year students.

**Evaluation of Progress in Graduate Study.** The Graduate Advisory Committee evaluates each student's undergraduate record and identifies any deficiencies to be corrected (usually in the first year). Thesis advisers may require additional course work of a more specialized nature. Students must complete all additional courses before taking the admission to candidacy examination.

At the end of each semester, the department chair, in consultation with the committee and faculty, reviews student performance in the formal course work; after students complete two semesters at Rice, the entire faculty conducts a review. Students must maintain at least a B average and demonstrate outstanding motivation and potential for research.

Evaluation after the first year includes:

- Continual review of research progress by the thesis research adviser
- A research progress review examination given each year by the student's Research Progress Review Committee
- Presentation of research progress at least once a year after the second year until submission of a complete doctoral thesis
- Completion of an oral admission to candidacy examination before the beginning of the student's sixth semester
- Defense of the Ph.D. thesis research and text in a final public seminar presentation and oral examination attended by the student's Thesis Committee

**M.A. Program.** All the above requirements and evaluation procedures apply to M.A. candidates with the following exceptions. The research progress review examination held during the M.A. student's second full year, which is identical in format to that for Ph.D. students, replaces the admission to candidacy examination; no other preliminary examination is held before the final oral defense of the master's thesis. M.A. candidates must complete a thesis and make a public oral defense of their research work to their Thesis Committee and other interested parties.

### **Degree Requirements for M.A. and Ph.D. in Ecology and Evolutionary Biology**

**Admission and First Year.** Applicants for graduate study in the Department of Ecology and Evolutionary Biology must have:

- B.A. degree or equivalent
- Scores from the Graduate Record Examination (GRE), including the advanced examination in biology
- Strong background in biology
- Completed course work in physics (one year), mathematics (including calculus), chemistry (including organic chemistry), and biochemistry

These requirements do not preclude admission of qualified applicants who have majored in areas other than biology.

Students should make up any deficiencies no later than their first year of residence (including the subsequent summer) but preferably during the summer preceding the first semester of residence. Students must pass an examination during the first year; those entering with an M.A. degree are normally exempt from this exam.

**M.A. Program.** For the M.A. degree, applicants must complete 30 semester hours of graduate study, including the completion and public defense of a thesis embodying the results of an original investigation.

**Ph.D. Program.** In addition to the general university requirements for Graduate Degrees (see pages 60–65), applicants for the Ph.D. degree must:

- Complete three or more years of graduate study in ecology and evolutionary biology, with at least two years in residence at Rice
- Maintain a grade average of B or better in courses taken in the department and satisfactory grades in courses taken outside the department
- Perform satisfactorily in teaching assignments for at least two semesters
- Pass the admission to candidacy examination given by the Graduate Advisory Committee (this examination may be oral and/or written)
- Complete an original investigation worthy of publication in a scientific journal and a doctoral thesis
- Publicly defend the doctoral thesis
- Present a departmental seminar on the research

**See BIOS (pages 271–278) in the Courses of Instruction section.**

# Center for the Study of Languages

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## The School of Humanities

### Director

Maria-Regina Kecht

### Senior Lecturers

Lilly C. Chen (*Chinese*)

Evelyne Datta (*French*)

Hiroko Sato (*Japanese*)

### Lecturers

Veronica Albin (*Spanish*)

Maria Alvarez (*Spanish*)

Suzana Bloem (*Portuguese*)

Patricia Brogdon-Gómez (*Spanish*)

Brigitte Crull (*French*)

Christa Gaug (*German*)

Raquel Gaytan (*Spanish*)

Gema Groskreutz (*Spanish*)

Marshall McArthur (*Chinese*)

Eileen Requena (*Spanish*)

Marcela Salas (*Spanish*)

Chao-mei Shen (*Chinese*)

Jane Verm (*Spanish*)

Gloria Yampey-Jörg (*Spanish*)

Insun Yang (*Korean*)

Meng Yeh (*Chinese*)

Elsa Zambosco-Thomas (*Spanish*)

The Center for the Study of Languages (CSL) was founded in August 1997 to promote and enhance the study of languages at Rice University. The role of the center is to establish innovative approaches to language education, expand opportunities for language learning across the curriculum, and increase Rice students' participation in study and work abroad. To accomplish these goals, CSL regularly sponsors professional development for instructors and graduate students in language departments.

CSL organizes workshops, lectures, and seminars as forums for departmental discussions of curricular design, assessment, and technology integration.

Through CSL, two cross-listed graduate seminars are offered: In the fall, students can take FREN 610, GERM 510, LING 610, or SPAN 610; in the spring, FREN 611, GERM 611, LING 611, or SPAN 611.

A sequence of 3 undergraduate courses on cross-cultural awareness are offered: UNIV 321, UNIV 322, and UNIV 323.

# Chemical Engineering

## The George R. Brown School of Engineering

### Chair

Kyriacos Zygourakis

### Professors

Constantine Armeniades

Walter G. Chapman

George J. Hirasaki

Larry V. McIntire

Antonios G. Mikos

Clarence A. Miller

Marc A. Robert

Ka-Yiu San

Mark Weisner

### Professors Emeriti

William W. Akers

Sam H. Davis

Derek C. Dyson

Joe W. Hightower

Riki Kobayashi

### Research Professor

Jesse David Hellums

### Associate Professor

Jennifer L. West

### Assistant Professors

Jacqueline L. Goveas

Nikolaos Mantzaris

Matteo Pasquali

Michael S. Wong

### Adjunct Professor

G. D. Fisher

### Adjunct Associate Professors

Glenn A. Taylor

Waylon V. House

### Adjunct Assistant Professors

Thomas W. Badgwell

R. Donald Bartusiak

David A. Hokanson

### Lecturers

Kenneth R. Cox

Herbert C. McKee

*Degrees Offered:* B.A., B.S., M.Ch.E., M.S., Ph.D.

This major gives undergraduates a sound scientific and technical grounding for further development in a variety of professional environments. Courses in mathematics, chemistry, physics, and computational engineering provide the background for the chemical engineering core, which introduces students to chemical process fundamentals, fluid mechanics, heat and mass transfer, thermodynamics, kinetics, reactor design, process control, and process design. Course electives may be used to create a focus area in one of the following four disciplines: bioengineering, environmental engineering, materials science/engineering, and computational engineering. Upon completing either the flexible B.A. requirements or the more scientific and professional B.S. requirements, students may apply for a fifth year of study leading to the nonthesis Master of Chemical Engineering (M.Ch.E.) degree. A joint M.B.A./M.Ch.E. degree is also available in conjunction with the Jesse H. Jones Graduate School of Management.

Students admitted for graduate studies leading to the M.S. or Ph.D. degrees must complete a rigorous program combining advanced course work and original research that must be formalized in an approved thesis. Graduate research is possible in a number of areas, including thermodynamics, interfacial phenomena, complex fluids, polymer science and rheology, process control and optimization, reaction engineering and catalysis, reservoir engineering, biotechnology, and biomedical engineering.

## Degree Requirements for B.S. in Chemical Engineering

For general university requirements, see Graduation Requirements (pages 16–18). The **B.S. degree** is accredited by the Accreditation Board for Engineering and Technology (ABET). Through careful selection of other engineering and science courses, a student can develop a focus (or concentration) area in any of the following 4 engineering disciplines: environmental science/engineering, bioengineering, materials science/engineering, and computational engineering. These elective programs can be completed within the framework of a B.S. in chemical engineering and will be recognized as a separate item on a student's transcript. Students majoring in chemical engineering must complete 100 hours in specified courses for a minimum of 132 hours at graduation. They must complete the following courses.

### **Chemistry**

CHEM 121/122 *General Chemistry with Laboratory*  
 or CHEM 151/152 *Honors Chemistry with Laboratory*  
 CHEM 211/212 *Organic Chemistry*  
 CHEM 217 *Organic Chemistry Lab*  
 CHEM 311/312 *Physical Chemistry*  
 Any 2 of CHEM 212, CHEM 311,  
 or CHEM 312

### **Chemical Engineering**

CENG 301 *Chemical Engineering Fundamentals*  
 CENG 303 *MATLAB, FORTRAN and MAPLE for Chemical Engineers*  
 CENG 305 *Computational Methods for Chemical Engineers*  
 CENG 343 *Chemical Engineering Lab I*  
 CENG 390 *Kinetics and Reactor Design*  
 CENG 401/402 *Transport Phenomena I and II*  
 CENG 403 *Equipment Design*  
 CENG 404 *Process Design*  
 CENG 411/412 *Thermodynamics I and II*  
 CENG 443 *Chemical Engineering Lab II*  
 CENG 470 *Process Dynamics and Control*

### **Mathematics**

MATH 101/102 *Single Variable Calculus I and II*  
 MATH 211 *Ordinary Differential Equations and Linear Algebra*

MATH 212 *Multivariable Calculus*  
 or equivalent honors courses  
 CAAM 336 *Differential Equations in Science and Engineering*  
 or MATH 381 *Introduction to Partial Differential Equations*

### **Physics**

PHYS 101 or 111 *Mechanics*  
 PHYS 102 or 112 *Electricity and Magnetism*

### **Mechanical Engineering**

MECH 211 *Engineering Mechanics*

### **Other Courses**

1 approved basic science course  
 3 courses from the following:  
 ELEC 243 *Electrical Circuits*  
 MSCI 301 *Materials Science*  
 CIVI 300 *Mechanics of Solids*  
 ENVI 434 *Chemical Transport and Fate in the Environment*  
 BIOE 420 *Biosystems Transport and Reaction Processes*  
 BIOE 460 *Biotechnological Processes*  
 ENVI 411 *Air Resource Management*  
 or see requirements for focus areas in environmental science/engineering, bioengineering, materials science/engineering, and computational engineering

The undergraduate curriculum is designed so that outstanding students interested in careers in research and teaching may enter graduate school after earning either bachelor's degree.



## Degree Requirements for B.A. in Chemical Engineering

Students pursuing the B.A. degree in chemical engineering must meet all of the requirements for the B.S.Ch.E. degree except for the following courses: CENG 404 and CENG 470, the additional “basic science” course, and the 3 “other engineering” courses. Free electives may be substituted for these 6 courses to reach at least 132 semester hours for graduation.

**Prerequisites for Chemical Engineering Courses.** Before undergraduates may register for courses in chemical engineering at the 300 level and above, they must satisfy the following prerequisites.

### For CENG 301

Math 101/102  
CHEM 121/122 or CHEM 151/152  
Corequisite: CENG 303

### For CENG 403

CENG 390, 402, and 412  
Co/Prerequisites: CENG 470 and MECH 211

### For CENG 390

CENG 301, 303, and 305  
MATH 211/212

### For CENG 404

CENG 403

### For CENG 401

CENG 411  
MATH 211/212  
PHYS 101/102

Co/Prerequisite: CENG 305

### For CENG 411

CENG 301 and 303

### For CENG 412

CENG 411

### For CENG 402

CENG 401  
Co/Prerequisites: CAAM 336 or MATH 381

### For CENG 470

CENG 390, 402, and 412

With the written consent of the instructor, students may register for a course without completing the required prerequisite(s). Waivers, however, are not transferrable.

## Degree Requirements for M.Ch.E., M.S., and Ph.D. in Chemical Engineering

For general university requirements, see Graduate Degrees (pages 60–65).

**M.Ch.E. Program.** For the M.Ch.E. degree, students must complete at least 30 hours of courses beyond those counted for their undergraduate degree. At least 6 of the courses taken must be upper-level courses in chemical engineering and 1 must be an approved mathematics course. The chemical engineering courses selected should include process design (two semesters) and process control, unless courses in these subjects were taken during the student’s undergraduate studies.

**M.S. Program.** Candidates for the M.S. degree must:

- Complete at least 18 approved semester hours with high standing
- Submit an original research thesis
- Defend the thesis in a public oral examination

**Ph.D. Program.** Candidates for the Ph.D. degree must:

- Demonstrate competence in the areas of applied mathematics, thermodynamics, transport processes, and chemical kinetics and reactor design by passing qualifying examinations, usually during the first year of study
- Complete at least 36 approved semester hours with high standing (with department approval, the course requirements may be reduced to 24 hours for students already holding an M.S. degree)
- Submit a thesis that provides evidence of their ability to carry out original research in a specialized area of chemical engineering
- Defend the thesis in a public oral examination

**See CENG (pages 283–286) in the Courses of Instruction section.**

# Chemistry

## The Wiess School of Natural Sciences

### Chair

Kenton H. Whitmire

### Professors

Andrew R. Barron  
 W. Edward Billups  
 Philip R. Brooks  
 Robert F. Curl, Jr.  
 Paul S. Engel  
 Graham P. Glass  
 John S. Hutchinson  
 James L. Kinsey  
 John L. Margrave  
 Ronald J. Parry  
 Ronald L. Sass  
 Gustavo E. Scuseria  
 Richard E. Smalley  
 James M. Tour  
 R. Bruce Weisman  
 Kenton H. Whitmire  
 Lon J. Wilson

### Associate Professors

Vicki L. Colvin  
 Seiichi P. T. Matsuda

### Assistant Professors

Victor Behar  
 Anatoly Kolomeisky  
 Scott F. Singleton

### Adjunct Professors

Marco Ciufolini  
 Tohru Fukuyama  
 Peter Harland  
 Michael Metzker  
 M. Robert Willcott

### Lecturers

Lawrence B. Alemany  
 Mary E.R. McHale  
 Sue Wiediger

### Distinguished Faculty Fellows

Robert H. Hauge  
 Ken A. Smith

### Senior Faculty Fellow

Bruce R. Johnson

### Faculty Fellow

Daniel Colbert

### Visiting Professor

Raphael Levine

*Degrees Offered:* B.A., B.S., M.A., Ph.D.

Recognizing the wide range of studies encompassed by chemistry, the department encourages undergraduates to explore offerings in other departments such as mathematics, computational and applied mathematics, biochemistry, and physics as well as upper-level courses in chemistry. An interdepartmental major is offered in chemical physics. Taking advantage of the department's extensive facilities, each B.S. degree candidate carries out a program of individual research under the supervision of a faculty member.

Graduate studies emphasize individual research, together with a fundamental understanding of chemistry beyond the students' specific interests. Faculty research interests include the synthesis and biosynthesis of organic natural products; the synthesis of small cycloalkanes, molecular recognition, and biological catalysis; bioinorganic and organometallic chemistry; main group element and transition metal chemistry; the chemistry of group 13 (III) elements; high-pressure and high-temperature chemistry; fluorine chemistry; chemical vapor deposition; the design of nanophase solids; molecular photochemistry and photophysics; infrared kinetic spectroscopy, laser and NMR spectroscopy; the study of oriented molecular beams; theoretical and computational

chemistry; and the study of giant fullerene molecules carbon nanotubes and their derivatives, polymer synthesis and characterization, molecular electronics, and molecular machines.

## Degree Requirements for B.A. in Chemistry

For general university requirements, see Graduation Requirements (pages 16–18). Students choosing to receive a B.A. in Chemistry must have a total of at least 120 semester hours at graduation, including the following courses required of all majors.

### Core Courses

#### *Chemistry*

- CHEM 121/122 *General Chemistry with Laboratory*  
(or CHEM 151/152 *Honors Chemistry with Laboratory*)  
CHEM 211/212 *Organic Chemistry*  
CHEM 215 *Organic Chemistry Lab*  
CHEM 311/312 *Physical Chemistry*  
CHEM 351 *Introductory Module in Experimental Chemistry I*  
CHEM 352 *Introductory Module in Experimental Chemistry II*  
CHEM 353 *Introductory Module in Analytical Methods*  
CHEM 360 *Inorganic Chemistry*

#### *Mathematics*

- MATH 101/102 *Single Variable Calculus I and II*  
(or MATH 121/122)  
MATH 211 *Ordinary Differential Equations and Linear Algebra*  
MATH 212 *Multivariable Calculus*  
(or MATH 221/222 *Honors Calculus III and IV*)

#### *Physics*

- PHYS 101 or 111 *Mechanics*  
PHYS 102 or 112 *Electricity and Magnetism*

#### *Other*

- NSCI 230 *Computation in the Natural Sciences* (or equivalent)

### Additional Lecture Courses

*At least 1 course from the following:*

- CHEM 401 *Advanced Organic Chemistry*  
CHEM 430 *Quantum Chemistry*  
CHEM 495 *Transition Metal Chemistry*

### Additional Laboratory Courses

*At least 3 advanced laboratory module credit hours from the following list:*

- CHEM 373 *Advanced Module in Fullerene Chemistry*  
CHEM 374 *Advanced Module in Synthetic Chemistry*  
CHEM 375 *Advanced Module in Inorganic Chemistry*  
CHEM 376 *Advanced Module in Materials Chemistry*  
CHEM 377 *Advanced Module in Catalysis*  
CHEM 381 *Advanced Module in Physical Chemistry, A*  
CHEM 382 *Advanced Module in Physical Chemistry, B*  
CHEM 383 *Advanced Module in Instrumental Analysis, A*  
CHEM 385 *Advanced Module in Polymer Chemistry*  
CHEM 391 *Advanced Module in Catalysis*

To ensure that students receive suitable breadth in their laboratory experience, advanced module selections must be approved by the student's major committee. Other advanced laboratory courses from chemically related disciplines (biochemistry, materials science, environmental engineering, etc.) may be substituted for these advanced modules, with approval of the committee. Chemistry majors may also substitute 2 advanced organic laboratory module credit hours for CHEM 215, with approval of the committee. Three hours of CHEM 491 (taken for one entire semester) may

be substituted for 1 advanced laboratory module if no other CHEM 491 credit is taken in the same semester.

Students in the chemistry B.A. major must satisfy the university distribution requirements and complete no fewer than 64 semester hours in addition to the departmental requirements for the chemistry major, giving a minimum total of 120 hours for graduation.

### Degree Requirements for B.S. in Chemistry

The core, math, physics, and NSCI230 requirements for the B.S. degree are the same as those for the B.A. degree. PHYS 201 Waves and Optics and PHYS 202 Modern Physics are recommended but not required.

In addition, the B.S. degree requires the following additional course and laboratory work:

- 2 courses from the **Additional Lecture Courses** list
- 3 advanced modules from the **Additional Laboratory Courses list**. As with the B.A. degree, 2 advanced laboratory modules may be substituted for CHEM 215 with departmental approval.
- At least 3 semester hours in undergraduate research (CHEM 491) in no less than 2-hour segments. With departmental approval, students may satisfy this requirement with HONS 470/471, which requires participation in CHEM 491 meetings. Students may also satisfy 3 of the 6 required hours in upper-level courses with additional research.
- 6 hours credit in upper-level courses (300 level or higher) in chemistry, mathematics, computational and applied mathematics, physics, biochemistry, or other subjects with adviser approval.

Students in the chemistry B.S. major must satisfy the distribution requirements and complete no fewer than 60 semester hours in addition to the departmental requirements for the chemistry major, giving a minimum total of 128 hours for graduation.

**American Chemical Society Certification.** The Rice Department of Chemistry is on the approved list of the Committee on Professional Training of the American Chemical Society and so can certify that graduates have met the appropriate standards. The B.A. degree is not certifiable. For certification, students must complete:

- All degree requirements for the B.S. degree listed above
- CHEM 495 *Transition Metal Chemistry*
- A department-approved course in biochemistry
- 9 hours total in upper-level courses from chemistry, physics, mathematics, computational and applied mathematics, biochemistry, or other courses in science or engineering with the approval of the department. The required course in biochemistry listed above counts toward this total.

A foreign language, preferably German, is recommended.

**Chemical Physics Major.** The chemical physics major leading to a B.S. degree is offered in conjunction with the Department of Physics; faculty advisers are Professor Hutchinson in chemistry and Professor Stevenson in physics. Students take upper-level courses in both chemistry and physics, focusing on the applications of physics to chemical systems. Students majoring in chemical physics must complete the following courses.

**Core Courses****Chemistry**

CHEM 121/122 *General Chemistry with Laboratory*  
 or CHEM 151/152 *Honors Chemistry with Laboratory*  
 CHEM 211 *Organic Chemistry*  
 CHEM 311/312 *Physical Chemistry*

**Physics**

PHYS 101 or 111 *Mechanics*  
 PHYS 102 or 112 *Electricity and Magnetism*  
 PHYS 201 *Waves and Optics*  
 PHYS 202 *Modern Physics*  
 PHYS 231 *Elementary Physics Lab II*  
 PHYS 301 *Intermediate Mechanics*  
 PHYS 302 *Intermediate Electrodynamics*

**Mathematics**

MATH 101/102 *Single Variable Calculus I and II*  
 or MATH 121/122  
 MATH 211 *Ordinary Differential Equations and Linear Algebra*  
 MATH 212 *Multivariable Calculus*  
 or MATH 221/222 *Honors Calculus III and IV*

**Additional Courses**

1 course from CHEM 212 or CHEM 360  
 2 courses from PHYS 311, PHYS 312, CHEM 430, or CHEM 415  
 6 hours from CHEM 215, CHEM 351, CHEM 352, CHEM 373–391, PHYS 331, or PHYS 332  
 2 courses from NSCI 230, CAAM 211, CAAM 212, or mathematics or computational and applied mathematics at the 300 level or above

**Admission Requirements for Accelerated B.S./Ph.D. Program in Chemistry**

The high level of training provided in the Rice B.S. program enables certain specially-qualified undergraduates to enter an accelerated program that allows them to complete a Ph.D. degree within two or three years after receiving their B.S. degree. Students electing this option must begin their research during the summer following their junior year and continue the research by taking CHEM 491 during their senior year.

**Degree Requirements for M.A. and Ph.D. in Chemistry**

For general university requirements, see Graduate Degrees (pages 60–65). Students who have completed course work equivalent to that required for a B.A. or B.S. in chemistry may apply for admission to the Ph.D. program. For more information, see Admission to Graduate Study (pages 65–66).

**M.A. Program.** Students are NOT normally admitted to study for an M.A. degree. However, this degree is sometimes awarded to students who do not wish to complete the entire Ph.D. program. Candidates for the M.A. degree must:

- Complete 6 one-semester courses
- Produce a thesis that presents the results of a program of research approved by the department
- Pass a final oral examination

Students who are admitted to Ph.D. candidacy may apply for an automatic master's degree.

**Ph.D. Program.** The Ph.D. is primarily a research degree. Graduate education is aimed at developing each student's ability to conduct independent, creative research and to develop habits of inquiry that will ensure continuing intellectual development throughout their careers. The completion of the Ph.D. program is expected to take no more than five years of full-time study. Ph.D. students must:

- Complete 6 one-semester graduate-level courses. No courses are specified. Courses are chosen with the approval of the student's advisory committee and/or faculty adviser. Courses should be at the 400 level or higher. Certain 300 level courses in other departments may be acceptable with departmental approval.
- Pass an examination involving a written and oral presentation of an original research proposal. The written proposal must conform to the format and guidelines established by the department. The guidelines are available in the department office. The proposal must be given to the committee at least one week before the date of the examination. The examination, including any follow-up work deemed necessary by the committee, must be completed within two months of the end of the student's fourth semester.
- In addition to the course work listed above, the student must participate in CHEM 600, 601, or 602 each semester that the student is in residence.
- The student is required to participate in CHEM 700, Teaching Practicum, for four semesters.
- Submit and defend a publishable thesis that represents an original and significant contribution to the field of chemistry.

**See CHEM (pages 287–291) in the Courses of Instruction section.**

# Civil and Environmental Engineering

## The George R. Brown School of Engineering

### Chair

Joseph B. Hughes

### Professors

Philip B. Bedient  
 Ahmad J. Durrani  
 Arthur A. Few, Jr.  
 Joseph B. Hughes  
 Mason B. Tomson  
 Pol D. Spanos  
 Anestis S. Veletsos  
 Calvin H. Ward  
 Mark R. Wiesner  
**Professors Emeriti**  
 Ronald P. Nordgren  
 John E. Merwin

### Associate Professors

Panos Dakoulas  
 Satish Nagarajaiah  
**Assistant Professors**  
 Matthew P. Fraser  
 Michael Terk  
**Adjunct Professors**  
 James B. Blackburn  
 Jean-Yves Bottero  
 Carroll Oubre  
**Adjunct Assistant  
 Professor**  
 Charles J. Newell

### Lecturers

Milton Hanks  
 Moyeen Haque  
 Sergios Liapis  
 John E. Merwin  
 Pat H. Moore  
 James Murtha  
 John M. Sedlak  
 Ed Segner, III  
 Taqir Sheikh  
 Christof Spieler

*Degrees Offered:* B.A., B.S.C.E., M.C.E., M.E.E., M.E.S., M.S., Ph.D.

Civil and Environmental Engineering (C&EE) is a broad and diverse field of study that offers students an education with several degree options. The most flexible degree options are at the bachelor's level, where students can major in civil engineering or complete a double major with any other Rice University major. The double major has two tracks, one in environmental engineering sciences (EES), and the other in environmental sciences (ES). For students desiring an accredited professional degree, the B.S.C.E. is offered with sub-specialization in one of three areas of concentration: structural engineering, environmental engineering, or engineering management. Three nonthesis graduate degrees (M.C.E., M.E.E., and M.E.S) are available to students who desire additional education and specialization in civil engineering, environmental engineering, or environmental sciences. Joint M.B.A./Master of Engineering degrees are also available in conjunction with the Jesse H. Jones Graduate School of Management.

Students admitted for graduate study leading to M.S. or Ph.D. degrees must complete a rigorous course of study that combines advanced course work with scholarly research culminating in the public defense of a written thesis. Graduate research is carried out in a range of areas reflecting the interests of the department's faculty. Examples include structural engineering and mechanics, earthquake engineering, geotechnical engineering, computer-aided design, hydrology, water resources and water quality engineering, air pollution and its control, and hazardous waste treatment.

### Degree Requirements for B.S.C.E. in Civil Engineering

The **B.S.C.E.** degree is a professional degree accredited by the Accreditation Board for Engineering and Technology (ABET). Students in the B.S. program may choose among the three specialization options as follows:

- structural engineering
- environmental engineering
- engineering management



For the B.S.C.E. degree, students must have a total of at least 134 semester hours at graduation, including the following required courses:

**General Science (39 hours)**

MATH 101 *Single Variable Calculus I*  
 MATH 102 *Single Variable Calculus II*  
 CHEM 121 *General Chemistry with Laboratory*  
 CHEM 122 *General Chemistry with Laboratory*  
 PHYS 101 *Mechanics with Laboratory*  
 PHYS 102 *Electricity and Magnetism with Laboratory*  
 MATH 211 *Ordinary Differential Equations and Linear Algebra*  
 MATH 212 *Multivariable Calculus*  
 CAAM 210 or CAAM 211 *Introduction to Engineering Computation*  
 STAT 310 *Probability and Statistics*  
 CAAM 335 *Matrix Analysis*—or equivalent

***1 of the following:***

CHEM 211 *Organic Chemistry*  
 or PHYS 201 *Waves and Optics*  
 or BIOS 201 *Introductory Biology*

**Core Engineering (41 Hours)**

CIVI 211 *Engineering Mechanics*  
 CIVI 300 *Mechanics of Solids I*  
 CIVI 302 *Strength of Materials Laboratory*  
 CIVI 304 *Structural Analysis I*  
 CIVI 306 *Steel Design*  
 CIVI 363 *Applied Fluid Mechanics*  
 ENVI 403 *Principles of Environmental Engineering*  
 CIVI 403 *Reinforced Concrete Design*  
 CIVI 404 *Reinforced Concrete Laboratory*  
 ENVI 412 *Hydrology and Watershed Analysis*  
 CIVI 451 *Introduction to Transportation*  
 CIVI 470 *Basic Soil Mechanics*  
 CIVI 480 *Senior Design Project*  
 CIVI 479 *Introduction to Project Development*  
 ENVI 512 *Hydrology Design Laboratory*

***1 of the following:***

MSCI 301 *Materials Science*  
 or ELEC 243 *Introduction to Electronics*  
 or MECH 200 *Classical Thermodynamics*  
 or COMP 260 *Visual Methods for Science and Engineering*  
 or any other approved elective

**Structural Engineering Option: (12 hours)**

CIVI 570 *Foundation Engineering*  
 CIVI 305 *Structural Analysis II*  
 CIVI 400 *Mechanics of Solids II*  
 500 Level Approved Elective

**Environmental Engineering Option: (12 hours)**

ENVI 306 *Global Environmental Law and Sustainable Development*  
 or any other approved ENVI course  
 ENVI 411 *Air Resource Management*  
 ENVI 434 *Chemical Transport and Fate in the Environment*  
 500 Level Approved Elective

**Engineering Management Option: (12 hours)**

CIVI 322 *Engineering Economics and Management*  
 ACCO 305 *Introduction into Accounting*  
 or any other approved MGMT course  
 CAAM 376 *Introduction to Management Science*  
 500 Level Approved Elective

***Recommended Electives: (12 hours)***

ENGI 302 *Ethical Decision-making for Engineers*  
 ENGI 321 *The Professional Engineer: Roles and Responsibilities*  
 CIVI 201 *Civil Engineers and the World We Build*  
 ENVI 201 *Introduction to Environmental Systems*  
 CIVI 251 *Plane Surveying*

See Civil Engineering website for a complete list.

Required Courses:	80 hours
Specialization Option:	12 hours
Free Electives:	18 hours
University Distribution:	24 hours
B.S. Civil Engineering Requirement:	134 hours

## Degree Requirements for B.A. in Civil Engineering

For general university requirements, see Graduation Requirements (pages 16–18). For the **B.A.** degree, students majoring in civil engineering must have a total of at least 120 semester hours at graduation. The B.A. is not accredited as a professional degree; detailed requirements are available from the department office.

## Degree Requirements for B.A. in Environmental Science and Engineering (as a double major)

The Department of Civil and Environmental Engineering offers the **B.A.** as a double major with any other major at Rice University. The double major has two tracks, one in environmental engineering sciences (EES), and one in environmental sciences (ES). Faculty from the Wiess School of Natural Sciences work with C&EE faculty in offering courses, advising, and administering the ES track of this double major. The double major is designed to accommodate:

- Students wishing to obtain a solid preparation for later graduate study in environmental engineering, environmental science, or other careers as environmental professionals (e.g., environmental economics or environmental law), and
- Students pursuing nonenvironmental careers (e.g., historians, lawyers, mechanical engineers, chemists) who will nonetheless benefit from a knowledge of the environmental dimensions of problems and issues they will confront.

The 68-semester-hour (minimum) double major in environmental science and engineering may be taken in conjunction with *any* stand-alone major offered in any school of the university. The EES track is highly recommended for students wishing to pursue graduate study in environmental engineering. Students wishing to obtain an ABET-accredited degree in engineering should pursue the environmental specialization within the B.S.C.E. or through a similar offering provided by the Department of Chemical Engineering. Students choosing the ES track are encouraged to select one of the following participating faculty members from the Wiess School of Natural Sciences as their adviser:

John Anderson (*Earth Science*)

Andre Droxler (*Earth Science*)

Arthur Few (*Physics and Astronomy and Environmental Science*)

F. M. Fisher (*Ecology and Evolutionary Biology*)

P. A. Harcombe (*Ecology and Evolutionary Biology*)

William Leeman (*Earth Science*)

D. Queller (*Ecology and Evolutionary Biology*)

R. L. Sass (*Ecology and Evolutionary Biology*)

Dale Sawyer (*Earth Science*)

J. E. Strassmann (*Ecology and Evolutionary Biology*)

A. Thornhill (*Ecology and Evolutionary Biology*)

The key components of the double major include:

- Foundation course work in mathematics, physics, chemistry, and biology required in both tracks.
- A set of 5 undergraduate core courses, required of all double majors, that acquaint undergraduates with a range of environmental problems encountered by scientists, engineers, managers, and policy makers. Core courses in the EES track cover the breadth of water, soil, and air media within the context of engineering technologies and approaches to problem solving, and stress quantitative analytical tools used to address environmental problems. Core courses in the ES track stress the components of the global environment and their interactions.

- 24 semester hours of environmental electives, in both tracks, from four categories: (1) social sciences and business, (2) humanities and architecture, (3) natural sciences, and (4) engineering. Students may petition to have electives, in addition to those currently listed, apply toward the double major.

### Specific Course Requirements for a Double Major (B.A.) in Environmental Science and Engineering include:

#### General Prerequisites

CHEM 121 or 151 *General Chemistry with Laboratory*  
 CHEM 122 or 152 *General Chemistry with Laboratory*  
 MATH 101 *Single Variable Calculus I*  
 MATH 102 *Single Variable Calculus II*  
 PHYS 101 or 125 or 111 *Mechanics*  
 PHYS 102 or 126 or 112 *Electricity and Magnetism*  
 BIOS 201 *Introductory Biology*  
 BIOS 202 *Introductory Biology*  
 (Environmental sciences track only)

#### 1 of the following 2 courses:

NSCI 230 *Computation in Natural Science*  
 (Environmental sciences track only)  
 MATH 211 *Ordinary Differential Equations and Linear Algebra*  
 (Environmental engineering sciences track only)

#### Core Courses: Environmental Sciences Track

BIOS 325 *Ecology*  
 GEOL 326 *Environmental Geology*  
 PHYS 443 *Atmospheric Science*  
 (or ENVI 411 *Air Resource Management*)

#### 2 of the following 3 courses:

ENVI 401 *Introduction to Environmental Chemistry*  
 ENVI 412 *Hydrology and Watershed Analysis*  
 GEOL 451 *Analysis of Environmental Data*

#### Core Courses: Environmental Engineering Sciences Track

ENVI 401 *Introduction to Environmental Chemistry*  
 ENVI 403 *Principles of Environmental Engineering*  
 ENVI 411 *Air Resource Management*  
 ENVI 412 *Hydrology and Watershed Analysis*  
 ENVI 434 *Chemical Transport and Fate in the Environment*

### Sample Curriculum in the Environmental Engineering Sciences Track

#### Freshman Year

##### Fall

MATH 101 *Single Variable Calculus I*  
 PHYS 101 *Mechanics*  
 CHEM 121 *General Chemistry with Laboratory*  
 Electives  
 HPER 101

##### Spring

MATH 102 *Single Variable Calculus II*  
 PHYS 102 *Electricity and Magnetism*  
 CHEM 122 *General Chemistry with Laboratory*  
 Electives  
 HPER 102

#### Sophomore Year

##### Fall

MATH 211 *Ordinary Differential Equations*  
 BIOS 201 *Introductory Biology*  
 Environmental Elective\*  
 Environmental Elective

##### Spring

Environmental Elective  
 Environmental Elective

\*ENVI 201 *Introduction to Environmental Systems* recommended as environmental elective

**Junior Year****Fall**

ENVI 401 *Introduction to Environmental Chemistry*  
Environmental Elective  
Environmental Elective

**Spring**

ENVI 411 *Air Resource Management*

**Senior Year****Fall**

ENVI 403 *Principles of Environmental Engineering*  
ENVI 434 *Chemical Transport and Fate in the Environment*  
Environmental Elective

**Spring**

ENVI 412 *Hydrology and Watershed Analysis*  
Environmental Elective

24 semester hours of environmental electives are required, with at least 6 semester hours of course work from each of four categories. Consult the faculty adviser or Department of Environmental Science and Engineering for a list of approved electives.

**Sample Curriculum in Environmental Sciences Track****Freshman Year****Fall**

MATH 101 *Single Variable Calculus I*  
PHYS 101 *Mechanics*  
CHEM 121 *General Chemistry with Laboratory*  
Electives  
HPER 101

**Spring**

MATH 102 *Single Variable Calculus II*  
PHYS 102 *Electricity and Magnetism*  
CHEM 122 *General Chemistry with Laboratory*  
Electives  
HPER 102

**Junior Year****Fall**

BIOS 325 *Ecology*  
GEOL 326 *Environmental Geology*  
Environmental Elective

**Spring**

PHYS 443 *Atmospheric Science*  
or ENVI 411 *Air Resource Management*  
Environmental Elective

**Sophomore Year****Fall**

NSCI 230 *Computation in the Natural Sciences*  
BIOS 201 *Introductory Biology*  
Environmental Elective  
Environmental Elective

**Spring**

BIOS 202 *Introductory Biology*  
Environmental Elective  
Environmental Elective

**Senior Year****Fall**

GEOL 451 *Analysis of Environmental Data* or ENVI 401 *Introduction to Environmental Chemistry*  
Environmental Elective  
Environmental Elective

**Spring**

ENVI 412 *Hydrology and Watershed Analysis*

24 semester hours of environmental electives are required, with at least 6 semester hours of course work from each of four categories. Consult the faculty adviser or Department of Environmental Science and Engineering for a list of approved electives.

## Degree Requirements for M.C.E., M.E.E., M.E.S., M.S., and Ph.D.

**Admission.** Applicants pursuing graduate education in structural engineering, structural mechanics, and geotechnical engineering should have a B.S.C.E. with a significant emphasis on structural engineering, but students with other undergraduate degrees may apply if they have adequate preparation in mathematics, mechanics, and structural analysis and design. Courses such as engineering technology or construction technology, however, do not represent adequate preparation. Applicants for the M.E.E. and the M.E.S. must have a B.S. or B.A. in related areas of science and engineering. Successful applicants typically have at least a 3.00 (B) grade point average in undergraduate work and high Graduate Record Examination (GRE) scores. For general university requirements, see Graduate Degrees and Admission to Graduate Study.

**M.C.E. Program.** The Master of Civil Engineering (M.C.E.) is a professional nonthesis degree requiring 30 hours of study. Students with a B.S. in Civil Engineering are eligible to apply. Areas of study include structural dynamics, offshore technology, reinforced concrete and prestressed concrete, reliability of systems, random vibrations, soil dynamics, soil-structure interaction, and structural control. For general university requirements, see Graduate Degrees. To earn a M.C.E. degree, students must:

- Complete 30 semester hours of approved courses

**M.B.A./M.C.E. Program.** For general university requirements, see Graduate Degrees. See also Accounting and Management. To earn a M.B.A./M.C.E. degree, students must:

- Complete 24 semester hours of civil engineering courses
- Complete 52 semester hours of business administration courses

**M.E.E. Program.** The Master of Environmental Engineering (M.E.E.) is a professional nonthesis degree requiring 30 hours of study. Students who have a B.S. degree in any field of engineering may apply. Areas of study include hydrology and water resources engineering, water treatment, water chemistry, air pollution and its control, and hazardous waste treatment. Although the program is open to all qualified applicants, candidates usually are completing undergraduate programs in environmental engineering and wish to extend their education into a fifth year of specialized study.

**M.E.S. Program.** The Master of Environmental Science (M.E.S.) is a professional nonthesis degree requiring 30 hours of study. To enter the M.E.S. program, applicants must have a B.A. or B.S. degree in any of the natural or physical sciences. Areas of study include hydrology and water resources engineering, water treatment, water chemistry, air pollution and its control, and hazardous waste treatment. Although the program is open to all qualified applicants, candidates typically are completing undergraduate programs in environmental science and wish to extend their education into a fifth year of specialized study.

**M.S. Program.** The Master of Science degree is offered in both Civil Engineering and Environmental Engineering. For general university requirements, see Graduate Degrees (pages 60–65). To earn a M.S. degree, students must:

- Complete at least 24 semester hours of approved courses. For students studying Environmental Engineering this must include one course each in environmental chemistry, water treatment, hydrology, and air quality (comparable course work completed previously may be substituted for the core courses)
- Select a thesis committee according to department requirements and conduct original research in consultation with the committee
- Present and defend in oral examination an approved research thesis

Students take the oral exam only after the committee determines the thesis to be in an acceptable written format for public defense. Normally, students take two academic years and the intervening summer to complete the degree.

Students intending to extend their studies into the Ph.D. degree program should note that the department does not grant an automatic M.S. degree to candidates who have not written a satisfactory master's thesis.

**Ph.D. Program in Civil Engineering.** For general university requirements, see Graduate Degrees (pages 60–65). To earn a Ph.D. degree in Civil Engineering, students must:

- Complete at least 48 semester hours of approved courses with high standing
- Pass a comprehensive preliminary examination testing the candidate's knowledge of the field and ability to think in a creative manner
- Pass an oral qualifying examination on the proposed thesis research and related topics
- Complete a thesis that constitutes an original contribution to knowledge
- Pass a final public oral examination on the thesis and related topics

**Ph.D. Program in Environmental Engineering.** To earn a Ph.D. degree in environmental engineering sciences, candidates must successfully accomplish the following (spending at least four semesters in full-time study at Rice):

- Complete 90 semester hours of approved course work with high standing
- Pass a preliminary written examination on the field of environmental engineering sciences
- Pass a qualifying examination on course work, proposed research, and related topics
- Complete a dissertation indicating an ability to do original and scholarly research
- Pass a formal public oral examination on the thesis and related topics

Ph.D. candidates in environmental engineering sciences take the preliminary exam, administered by department faculty, after two semesters of course work. Candidates who pass this exam then form a doctoral committee according to department requirements. The qualifying examination administered by the doctoral committee after candidates develop a research proposal evaluates their preparation for the proposed research and identifies any areas requiring additional course work or study.

**See CIVI (pages 294–298) and ENVI (pages 345–347) in the Courses of Instruction section.**

## Classics

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### The School of Humanities

**Professor**  
Harvey Yunis

**Associate Professors**  
Hilary S. Mackie  
Kristine Gilmartin Wallace

**Assistant Professor**  
Scott McGill

*Degree Offered: B.A.*

Formally administered by the Department of Hispanic and Classical Studies, the classics major explores the languages, literature, history, and culture of ancient Greece and Rome. Students may elect to concentrate on either Latin or classics, which involves the study of ancient Greek as well as Latin. Both concentrations emphasize the study of the literature of Greek and Roman civilizations in the original languages. Additional “classical studies” courses use English translations to explore various aspects of classical civilizations.

The classics major provides an essential base for further graduate work in classics, ancient history, ancient philosophy, ancient religion (especially early Christianity), and ancient art history. A secondary teaching certificate awarded in conjunction with the B.A. is available through the Department of Education. Further information on the classics major is available from faculty members. Faculty also help students arrange travel to Greece or Italy, whether to work on a dig or to study at the Intercollegiate Center for Classical Studies in Rome.

### Degree Requirements for B.A. in Classics

For general university requirements, see Graduation Requirements (pages 16–18).

**Classics Majors.** Students majoring in classics (both Greek and Latin) must complete 27 semester hours of departmental courses as follows:

- 21 hours (7 courses) in Greek and Latin at the 200 level or above
- At least 6 hours (2 courses) in each language
- 3 hours (1 course) at the 300 level in classical studies or from another department in one of the following: Greek and Roman philosophy, art, history, or religion
- LATI 493 *Comprehensive Examination* in the spring semester of the senior year

**Latin Majors.** Students majoring in Latin must complete 24 semester hours of departmental courses as follows:

- 18 hours (6 courses) in Latin at the 200 level or above
- 3 hours (1 course) at the 300 level in classical studies or from another department in one of the following: Greek and Roman philosophy, art, history, or religion
- LATI 493 *Comprehensive Examination* in the spring semester of the senior year

**Comprehensive Examination.** Students in both concentrations take the comprehensive examination in the last week of their last semester.

**Language Competency Requirement**

Students wishing to use Latin or Greek to satisfy the language competency requirement should refer to Graduation Requirements (pages 16–18). For clarification, see the Center for the Study of Language website, [http://www.ruf.rice.edu/~csl/language\\_links/web\\_requirement\\_info.html](http://www.ruf.rice.edu/~csl/language_links/web_requirement_info.html). For further details on using Latin or Greek to satisfy the requirement, see a departmental adviser.

**See CLAS (pages 299–300), GREE (page 374), and LATI (pages 419–420) in the Courses of Instruction section.**



# Cognitive Sciences

## The School of Social Sciences

### Director

Randi C. Martin

### Professors

John W. Clark, Jr.  
Philip W. Davis  
Richard E. Grandy  
Stephen L. Klineberg  
Daniel Osherson  
Stephen A. Tyler  
Michael Watkins

### Professors Emeriti

James E. Copeland  
Sydney M. Lamb

### Associate Professors

Suzanne E. Kemmer  
David M. Lane  
Devika Subramanian

### Assistant Professors

Michel Achard  
Michael Barlow  
Michael Byrne  
Eric Margolis  
Geoffrey Potts  
Tony Ro

*Degree Offered: B.A.*

The cognitive sciences provide a multidisciplinary study of the mind. Researchers in this field seek to understand such mental phenomena as perception, thought, memory, the acquisition and use of language, learning, concept formation, and consciousness.

Research projects in the cognitive sciences may involve observing the development of mental skills in children, programming computers to engage in complex problem solving, or analyzing the nature of meaning. Methods include observation and analysis, model building, experimentation, and the computer simulation of mental structures and processes. Some investigators focus on relationships between brain structures and behavior, some work with computer simulation, and others work at more abstract philosophical levels.

### Degree Requirements for B.A. in Cognitive Sciences

Students planning to major in cognitive sciences should take 1 or more of the following courses during their first and second years: PSYC 101 Introduction to Psychology, PHIL 103 Philosophical Aspects of Cognitive Science, LING 200 Introduction to the Scientific Study of Language, PSYC 203 Introduction to Cognitive Psychology. Students should try to complete the required 200-level core courses (see below) by the end of their sophomore year.

For general university requirements, see Graduation Requirements (pages 16–18). Cognitive sciences majors will be required to take a total of 7 core courses (see below) plus 5 additional courses. For some of the core courses, students may select from two or more options. Any of these options not used to satisfy the core may be used to satisfy the additional course requirements. Among the 5 additional courses, a minimum of 3 and a maximum of 4 of these courses should be in an area of concentration. The available areas of concentration are: linguistics, philosophy, psychology, neuroscience, and applied cognitive sciences. Suitable courses in the first 3 of these areas are listed below under their respective department headings. Suitable courses in neuroscience include any of the 3- or 4-credit courses under the neuroscience course heading below or: BIOS 421

Neurobiology, CSCI 420 Brain and Behavior, ELEC 481 Fundamentals of Systems Physiology and Biophysics, LING 411 Neurolinguistics, and PSYC 362 Biopsychology. Appropriate courses in the applied cognitive sciences concentration include PSYC 441 Human-Computer Interaction (required of all students in this concentration), PSYC 340 Research Methods, PSYC 370 Introduction to Human Factors, COMP 360 Computer Graphics, and PSYC 409 Methods in Human-Computer Interaction.

**Honors program.** Students in the honors program will conduct an independent research project of either one or two semesters under the guidance of one or more faculty members in the cognitive sciences program. Students intending to go into this program should consult with one or more faculty about their project before the end of their junior year. Their proposals must be accepted by their adviser(s) and the director of the program by the end of the semester preceding initiation of the project—that is, during the spring of the junior year for projects beginning in the fall, and during the fall of the senior year for projects beginning in the spring. In cases where the director is the adviser, the proposal must be approved by an additional member of the Cognitive Sciences Steering Committee. Students in the program will enroll in one or both of CSCI 481 Honors Project (fall, 3 hours) and 482 Honors Project (spring, 3 hours). Students who undertake a two-semester project will be allowed to continue into the second semester only if their adviser(s) judge(s) that they have made substantial progress during the first semester. At the end of the project, each student in the honors program will make an oral presentation of his/her project at a meeting to which all cognitive science students and faculty will be invited and will submit a final written project report to his/her adviser(s) and to the director of the program.

### **Core Courses**

COMP 200 *Elements of Computer Science* (3 hours)  
 or COMP 210 *Introduction to Principles of Scientific Computation* (4 hours)  
 COMP 440 *Artificial Intelligence*  
 or CSCI 410 *Computational Modeling of Cognitive Processes*  
 or PSYC 352 *Formal Foundations of Cognitive Sciences*  
 or LING 317 *Language and Computers*  
 LING 200 *Introduction to the Scientific Study of Language*  
 or LING 300 *Linguistic Analysis*  
 LING 306 *Language and the Mind*  
 or LING 315 *Semantics*  
 PHIL 305 *Mathematical Logic*  
 or PHIL 312 *Philosophy of Mind*  
 PSYC 203 *Introduction to Cognitive Psychology*  
 PSYC 351 *Psychology of Perception*  
 or PSYC 362 *Biopsychology*

### **Additional Courses**

#### ***Cognitive Sciences***

CSCI 390 *Supervised Research in Cognitive Science*  
 CSCI 410 *Computational Modeling of Cognitive Processes*  
 CSCI 420 *Brain and Behavior*  
 CSCI 481/482 *Honors Project*

#### ***Computer Science***

COMP 212 *Intermediate Programming*  
 COMP 440 *Artificial Intelligence*  
 COMP 450 *Algorithmic Robotics*

#### ***Linguistics***

LING 200 *Introduction to the Scientific Study of Language*  
 LING 300 *Linguistic Analysis*  
 LING 301 *Phonetics and Phonology*  
 LING 306 *Language and the Mind*  
 LING 315 *Semantics*  
 LING 317 *Language and Computers*  
 LING 402 *Syntax and Semantics*  
 LING 403 *Modern Linguistic Theory*  
 LING 411 *Neurolinguistics*  
 LING 412 *Language and Intelligence*  
 LING 467 *Computational Projects*  
 LING 490 *Discourse Analysis*

**Neuroscience**

- NEUR 500 *Functional Neuroanatomy and Systems Neuroscience*  
 NEUR 501 *Computational and Cognitive Neuroscience*  
 NEUR 503 *Molecular Neuroscience I and II*  
 NEUR 504 *Cellular Neurophysiology I and II*  
 NEUR 505 *Optical Imaging in Neuroscience*  
 NEUR 506 *Learning and Memory*  
 NEUR 311, 512 *Integrative Neuroscience Core Course*  
 (two semesters)

**Note:** Many of these courses are taught by Baylor College of Medicine faculty and listings may change year to year. Check the Neuroscience website <http://www.ruf.rice.edu/~neurosci/> for the latest listings.

**Philosophy**

- PHIL 103 *Philosophical Aspects of Cognitive Science*  
 PHIL 303 *Theory of Knowledge*  
 PHIL 305 *Mathematical Logic*  
 PHIL 312 *Philosophy of Mind*  
 PHIL 353 *Philosophy of Language*  
 PHIL 357 *Incompleteness, Undecidability, and Computability*

**Psychology**

- PSYC 308 *Memory*  
 PSYC 309 *Psychology of Language*  
 PSYC 340 *Research Methods*  
 PSYC 351 *Psychology of Perception*  
 PSYC 352 *Formal Foundations of Cognitive Science*  
 PSYC 360 *Thinking*  
 PSYC 362 *Biopsychology*  
 PSYC 409 *Methods in Human-Computer Interaction*  
 PSYC 441 *Human-Computer Interaction*

**Other Departments**

- ANTH 406 *Cognitive Studies in Anthropology and Linguistics*  
 BIOS 421 *Neurobiology*  
 ELEC 201 *An Introduction to Engineering Design*  
 ELEC 481 *Fundamentals of Systems Physiology and Biophysics*  
 ELEC 498 *Introduction to Robotics*  
 SOCI 353 *Conceptions of Human Nature*  
 STAT 300 *Model Building*

**See CSCI (page 307) in the Courses of Instruction section.**

# Computational and Applied Mathematics

## The George R. Brown School of Engineering

### Chair

John E. Dennis

### Professors

John Edward Akin (joint: MEMS)

Michael M. Carroll (joint: MEMS)

Steven J. Cox

Danny C. Sorensen

William W. Symes

Richard A. Tapia

### Professors Emeriti

Robert E. Bixby

Sam H. Davis (joint: CENG)

Angelo Miele (joint: MEMS)

Paul E. Pfeiffer

Chao-Cheng Wang (joint: MEMS)

### Associate Professors

Liliana Borcea

Nathaniel Dean

Matthias Heinkenschloss

Yin Zhang

### Assistant Professors

Mark Embree

Petr Kloucek

### Adjunct Professors

J. Bee Bednar

Richard Carter

Evin Joyce Cramer

Elmer Eisner

Roland Glowinski

Richard P. Kendall

Emilio J. Nuñez

Donald W. Peaceman

Michael B. Ray

Jacques R. Tabanou

Phuong A. Vu

### Adjunct Associate Professors

Amr El-Bakry

Michael W. Trosset

### Adjunct Assistant Professors

Charles Audet

Aladin M. Boriek

### Lecturer

Michael Pearlman

### Faculty Fellows

Alan Carle

Michael Fagan

*Degrees Offered:* B.A., M.C.A.M., M.C.S.E., M.A., Ph.D.

Courses within this major can provide foundations applicable to the many fields of engineering, physical sciences, life sciences, behavioral and social sciences, and computer science. Undergraduate majors have considerable freedom to plan a course of study consistent with their particular interests. The professional degree (M.C.A.M.), for persons interested in practicing within this field, emphasizes general applied mathematics, operations research and optimization, and numerical analysis, while the M.A. and Ph.D. programs concentrate on research. Faculty research interests fall in the four general areas of numerical analysis and computation, physical mathematics, operations research and optimization, and mathematical modeling in physical, biological, or behavioral sciences.

A further advanced degree program in computational science and engineering (C.S.E.) addresses the current need for sophisticated computation in both engineering and the sciences. Such computation requires an understanding of parallel and vector capabilities and a range of subjects including visualization, networking, and programming environments. An awareness of a variety of new algorithms and analytic techniques is also essential to maximizing the power of the new computational tools.

A joint M.B.A./Master of Engineering degree is also available in conjunction with the Jesse H. Jones Graduate School of Management.

### Degree Requirements for B.A. in Computational and Applied Mathematics

Students majoring in computational and applied mathematics are required to complete the 51 semester hours spelled out in the following program of study.

**Introductory Courses:** Typically completed during the first two years

MATH 101 and 102 *Single Variable Calculus I and II*

(or honors equivalent)

MATH 211 *Ordinary Differential Equations and Linear Algebra*

MATH 212 *Multivariable Calculus*

COMP 110 *Computation in Science and Engineering*

CAAM 210 or 211 *Introduction to Engineering Computation*

**Intermediate Courses:** Typically completed by the end of the third year

CAAM 321 *Introduction to Real Analysis*

CAAM 322 *Introduction to Real Analysis II*

CAAM 335 *Matrix Analysis*

CAAM 336 *Differential Equations in Science and Engineering*

(or STAT 310 *Probability and Statistics*  
or STAT 331 *Applied Probability*)

**Advanced Courses:** Two full-year sequences chosen from the following 5 areas

#### *Numerical Analysis*

CAAM 451 *Numerical Linear Algebra*

CAAM 453 *Numerical Analysis and Ordinary Differential Equations*

#### *Operations Research*

CAAM 471 *Linear Programming*

CAAM 475 *Integer and Combinatorial Optimization*

#### *Optimization*

CAAM 454 *Optimization Problems in Computational Engineering and Science*

CAAM 460 *Optimization Theory*

#### *Differential Equations*

CAAM 436 *Partial Differential Equations I*

CAAM 437 *Partial Differential Equations II*

#### *Scientific Computation*

CAAM 420 *Computational Science I*

CAAM 421 *Computational Science II*

#### *Electives*

At least 3 courses, at or above the 300 level, selected upon consultation with the CAAM undergraduate adviser. The department strongly recommends that majors include ENGL 308 *Engineering Communications* among their electives.

### Degree Requirements for M.C.A.M., M.A., and Ph.D. in Computational and Applied Mathematics

**Admission.** Admission to graduate study in computational and applied mathematics is open to qualified students holding bachelor's or master's degrees (or their equivalent) in engineering, mathematics, or the physical, biological, mathematical, or behavioral sciences. Department faculty evaluate the previous academic record and credentials of each applicant individually. For general information, see Graduate Degrees (pages 60–65) and Admission to Graduate Study (pages 65–66).

Applicants should be aware that it normally takes one to two years to obtain a master's degree and three to five years to obtain a doctorate (a master's degree is not a prerequisite for the doctoral degree).

**M.C.A.M. Program.** This professional degree program emphasizes the applied aspects of mathematics. The M.C.A.M. degree requires satisfactory completion of at least 30 semester hours of course work approved by the department.

**M.A. Program.** For an M.A. in computational and applied mathematics, students must:

- Complete at least 30 semester hours at the graduate level, including 5 courses in computational and applied mathematics, in addition to thesis work
- Produce an original thesis acceptable to the department
- Perform satisfactorily on a final public oral examination on the thesis

For students working toward the Ph.D. degree, successful performance on the thesis proposal fulfills the master's thesis requirement.

**Ph.D. Program.** For a Ph.D. in computational and applied mathematics, students must:

- Complete a course of study approved by the department, including at least 2 courses outside the major area
- Perform satisfactorily on preliminary and qualifying examinations and reviews
- Produce an original thesis acceptable to the department
- Perform satisfactorily on a final public oral examination on the thesis

**Financial Assistance.** Graduate fellowships, research assistantships, and graduate scholarships are available and are awarded on the basis of merit to qualified students. Current practice in the department is for most doctoral students in good standing to receive some financial aid.

## **Degree Requirements for M.C.S.E. and Ph.D. in Computational Science and Engineering**

**C.S.E. Program Area.** Recognizing the increasing reliance of modern science and engineering on computation as an aid to research, development, and design, the Department of Computational and Applied Mathematics, in conjunction with the Departments of Biochemistry and Cell Biology, Earth Science, Computer Science, Chemical Engineering, Electrical and Computer Engineering, Environmental Science and Engineering, and Statistics, has established an advanced degree program in an area called computational science and engineering (C.S.E.). The program focuses attention on modern computational techniques and provides a resource of training and expertise in this area.

The program is administered by a committee of faculty chosen by the deans of engineering and natural sciences, with ultimate oversight by the provost. The Computational Science Committee (CSC) helps students design an appropriate course of study and sets the examination requirements.

Students may enter the C.S.E. program either directly or indirectly through one of the participating departments (see list above). In all cases, however, students must fulfill the admissions requirements of one department, which acts as their associated department. Students then meet the normal requirements for graduate study within that department in every way (including teaching and other duties) except that the curriculum and examination requirements are set by the CSC.

**M.C.S.E. Program.** This program's intent is to produce professional experts in scientific computing able to work as part of an interdisciplinary research team. Training is concentrated in state-of-the-art numerical methods, high-performance computer architectures, use of software development tools for parallel and vector computers, and the application of these techniques to at least one scientific or engineering area. For general university requirements, see Graduate Degrees (pages 60–65).

For the M.C.S.E. degree, students must complete at least 30 semester hours of course work approved by the CSC; no more than 2 of the courses may be taken at the 300 level, taken outside the C.S.E. program area, or satisfied by transfer credit. Each student's program of study must meet the requirements listed below. Modification of requirements can be requested by petition.

#### **Required Courses**

COMP 412 *Compiler Construction*

(or ELEC 425 *Computer Systems Architecture*)

CAAM 420 *Computational Science I*  
(taken as soon as possible)

CAAM 421 *Computational Science II*  
(taken as soon as possible)

#### **1 course from the following:**

CAAM 451 *Numerical Linear Algebra*

CAAM 452 *Computational Methods for Differential Equations*

CAAM 453 *Numerical Analysis—Ordinary Differential Equations*

CAAM 454 *Optimizing Problems in Computational Engineering and Science*

CAAM 471 *Linear Programming*

#### **Computational Science Electives**

4 courses selected from an approved list of COMP or CAAM courses (at least 2 courses at the 500 level)

#### **Open Electives**

2 approved courses other than CAAM or COMP courses at the 300 level or above (a computational project taken within a participating department also satisfies this requirement)

#### **Application Areas**

An appropriate sequence of courses from a participating application area at the 300 level or above

**Ph.D. Program.** Study at the doctoral level seeks to advance the field through original research. For general university requirements, see Graduate Degrees (pages 60–65). For the Ph.D. in computational science and engineering, students must:

- Complete a course of study approved by the CSC, including at least 2 courses outside the major area
- Perform satisfactorily on preliminary and qualifying examinations and reviews
- Complete 2 courses or a reading examination on an approved foreign language
- Produce an original thesis acceptable to the CSC
- Perform satisfactorily on a final public oral examination on the thesis

**See CAAM (pages 279–283) in the Courses of Instruction section.**

# Computer Science

## The George R. Brown School of Engineering

### Chair

Moshe Y. Vardi

### Professors

Robert S. Cartwright, Jr.  
Keith Cooper  
Ronald N. Goldman  
G. Anthony Gorry  
Kenneth W. Kennedy, Jr.  
Joe D. Warren  
Willy E. Zwaenepoel

### Adjunct Professors

Jack Dongarra  
Leland Ellis  
Geoffrey Fox  
Bowen Loftin  
S. Lennart Johnsson

### Associate Professors

Alan L. Cox  
Peter Druschel  
Dave Johnson  
Lydia Kavvaki  
Devika Subramanian

### Adjunct Associate Professors

P. Read Montague  
Scott K. Warren

### Assistant Professors

Scott Rixner  
Dan Wallach

### Adjunct Assistant Professor

Vikram Adve

### Research Scientists

Bradley Broom  
Zoran Budimlic  
Robert Fowler  
Richard Hanson  
Guohua Jin  
Linda Torczon

### Lecturers

Ian Barland  
Ed Chen  
John Greiner  
Dung “Zung” Nguyen

### Postdoctoral Research

### Associates

Armando Tacchella  
Ming Zhang

### Joint Appointments

#### (with Electrical and Computer Engineering)

#### Professor

J. Robert Jump

#### Associate Professors

Joseph Cavallaro  
Peter Varman

#### Assistant Professor

Edward Knightly

#### (with Psychology)

#### Professor

Daniel N. Osherson

#### (with Chemistry)

#### Professor

James Tour

*Degrees Offered: B.A., B.S., M.C.S., M.S., and Ph.D.*



Computer science is concerned with the study of computers and computing, focusing on algorithms, programs and programming, and computational systems. The main goal of the discipline is to build a systematic body of knowledge, theories, and models that explain the properties of computational systems and to show how this body of knowledge can be used to produce solutions to real-world computational problems. Computer science is the intellectual discipline underlying information technology, which is widely accepted now as the ascendant technology of the next century. Students in computer science at Rice benefit from the latest in equipment and ideas as well as the flexibility of the educational programs. The research interests of the faculty include algorithms and complexity, artificial intelligence and robotics, compilers, distributed and parallel computation, graphics and visualization, operating systems, and programming languages.

The department offers two undergraduate degrees: the Bachelor of Arts degree (B.A.) and the Bachelor of Science degree (B.S.). The department offers two master's degrees: the professional Master of Computer Science degree (M.C.S.) and the research-oriented Master of Science degree (M.S.). The department also offers a doctoral degree (Ph.D.).

A joint M.B.A./Master of Engineering degree is also available in conjunction with the Jesse H. Jones Graduate School of Management.

### **Degree Requirements for B.A. in Computer Science**

For general university requirements, see Graduation Requirements (pages 16–18). The undergraduate program in computer science has been designed to accommodate a wide range of student interests. The program is sufficiently flexible for a student to customize it to her or his interests. A student can develop a broad educational program that couples computer science education with a variety of other fields in engineering, natural sciences, the humanities, or social sciences. Alternatively, a program might be designed for a student preparing for graduate study in computer science or possibly for a career in computing and information technology.

The undergraduate program consists of required core courses, which are introductory courses covering material required of all majors; required breadth courses, which are upper-level courses ensuring knowledge in a broad range of areas; and electives that give students the freedom to explore specific interests. Students majoring in computer science must complete between 58 and 60 semester hours of courses in these three categories.

**Core Courses** (8 courses for a total of 28 hours, required for all majors, usually taken in the freshman and sophomore years)

MATH 101/102 *Single Variable  
Calculus I and II*  
COMP 210 *Introduction to Principles of  
Scientific Computation*  
COMP 212 *Intermediate Programming*  
COMP 280 *Mathematics of Computer  
Science*  
COMP 314 *Applied Algorithms and  
Data Structures*  
COMP 320 *Introduction to Computer  
Organization*

**1 course from the following:**  
MATH 211 *Ordinary Differential  
Equations and Linear Algebra*  
MATH 212 *Multivariable Calculus*  
MATH 221 *Honors Calculus III*

**Breadth Courses** (7 courses for a total of 23 hours, required for all majors, usually taken in the junior and senior years) (\* = preferred choice)

STAT 331\*  
or 310 *Probability*

CAAM 353 *Numerical Analysis*

MATH 355\*

or CAAM 335 *Linear Algebra*

COMP 311 or 412 *Programming  
Languages*

COMP 481 or 482 *Theory*

COMP 421 *Operating Systems*

ELEC 326 *Digital Circuits*

**Electives** (2 courses for a total of 6 to 8 hours in computer science at the 300 level or higher)

## Degree Requirements for B.S. in Computer Science

The B.S. degree is designed for students who are interested in a more in-depth study of computer science in order to prepare themselves for a professional career in the computing industry. To receive a B.S. degree, a student must complete all the requirements of the B.A. degree (i.e., core, breadth, and electives), with the addition of PHYS 101/102 (or PHYS 111/112) (7 hours) to ensure a strong scientific background. In addition, the student must complete the depth component. This component consists of a coherent set of four or five courses specializing in some area of computer science. The same course cannot satisfy both the breadth requirement and the depth requirement. Students can adopt a preset depth component or design their own components, consisting of at least 15 hours. B.S. degree plans have to be approved by departmental advisers by no later than the end of the junior year. Sample curricula are listed on the departmental website; more information is available from department advisers. The computer science requirements of the B.S. degree total 79 to 81 semester hours. For a B.S. degree in computer science, a total of 128 semester hours is required.

## Degree Requirements for M.C.S., M.S., and Ph.D. in Computer Science

**Master's Programs.** For general university requirements, see Graduate Degrees (pages 60–65). The professional M.C.S. degree is a terminal degree for students intending to pursue a technical career in the computer industry. To earn the M.C.S. degree, students must successfully complete 30 semester hours of course work approved by the department and following the plan formulated in consultation with the department adviser.

Areas of concentration for the M.C.S. include algorithms and complexity, artificial intelligence, compiler construction, distributed and parallel computing, graphics and geometric modeling, operating systems, and programming languages. The professional program normally requires three semesters of study.

The M.C.S. degree with a concentration in Bioinformatics is for students intending to pursue a technical career in the biotechnology industry. Students learn to integrate mathematical and computational methods to analyze biological, biochemical, and biophysical data. This program requires prior background in computer science, bio-sciences, and mathematics. To earn this degree, students must successfully complete 40 hours of approved course work meeting departmental requirements. This program normally requires four semesters of study.

The M.S. degree is a research degree requiring a thesis in addition to course work.

**Ph.D. Program.** The Ph.D. degree is for students planning to pursue a career in computer science research and education. The doctoral program normally requires four to six years of study. To earn a Ph.D. in computer science, students must:

- Meet departmental course requirements
- Complete a COMP 590 project by the end of the third semester
- Complete a master's thesis by the end of the fifth semester, if a previous master's thesis has not been approved by the graduate committee
- Pass a qualifying examination in an area of specialization within seven semesters after entering the Ph.D. program
- Conduct original research, submit an acceptable Ph.D. thesis proposal, and successfully defend the thesis proposal
- Submit an acceptable Ph.D. thesis that reports research results and pass a final oral defense

Students who successfully meet the first three requirements are awarded the Master of Science degree. Students successfully meeting all requirements, plus any departmental and university requirements, are awarded the Ph.D. degree.

**Financial Assistance.** Fellowships and research assistantships are available to students in the Ph.D. program. Both provide a monthly stipend for the academic year and cover all tuition expenses. More substantial monthly stipends may be available during the summer for students working on departmental research projects. In all cases, continued support is contingent on satisfactory progress in the program. Ph.D. students also are expected to assist in the teaching and administration of undergraduate and graduate courses.

**Additional Information.** For further information and application materials, write the Department of Computer Science—MS 132, Rice University, P.O. Box 1892, Houston, Texas 77251-1892.

**See COMP (pages 300–307) in the Courses of Instruction section.**

# Earth Science

## The Wiess School of Natural Sciences

### Chair

Alan Levander

### Professors

John B. Anderson  
 Hans G. Avé Lallemant  
 Richard G. Gordon  
 William P. Leeman  
 Dale S. Sawyer  
 Manik Talwani

### Associate Professors

Gerald R. Dickens  
 André W. Droxler  
 Andreas Lutge  
 Colin A. Zelt

### Assistant Professors

Adrian Lenardic  
 Julia Morgan

### Adjunct Professors

K. K. Bissada  
 Carlos A. Cramez  
 Stephen H. Danbom  
 Jeffrey J. Dravis  
 Paul M. Harris  
 Garry D. Jones  
 M. Turhan Taner  
 John C. Van Wagoner  
 James L. Wilson

### Adjunct Associate Professor

W. C. Rusty Riese

### Adjunct Assistant Professors

Vitor Abreu  
 Scott A. Morton  
 Paul D. Spudis  
 Gabor Tari  
 Yitian Xiao

*Degrees Offered: B.A., B.S., M.A., Ph.D.*

The undergraduate program in geology focuses on a strong core of courses in all areas of earth materials, processes, and history, as well as in allied sciences. Students also gain experience with analytical equipment, computer systems, and in fieldwork. The undergraduate geophysics major combines courses that apply physics to the study of the earth's interior with course work in geology and mathematics. The program emphasizes computational geophysics and reflection seismology. A second major can lay the foundation for a career in environmental geology, and students may also acquire certification in earth science as a teaching field.

Advanced graduate work is available in marine geology and paleoceanography, stratigraphy, carbonate and siliciclastic sedimentology, igneous petrology, geochemistry, structural geology, regional tectonics, global plate tectonics, reflection and crustal seismology, and computational geophysics and geodynamics. Ideally, programs of study and research incorporate more than one of these specialties.

### Degree Requirements for B.S. in Geology

For general university requirements, see Graduation Requirements (pages 16–18). Students completing the B.S. program should have a total of at least 129 hours at graduation. Students must complete the following courses.

**Earth Science**

ESCI 101 *The Earth*  
 or ESCI 102 *Evolution of the Earth*  
 or ESCI 107 *Oceans and Global Change*  
 or ESCI 108 *Crises of the Earth*  
 ESCI 105 *Introductory Lab for Earth Science*  
 ESCI 311 *Mineralogy and Optics*  
 ESCI 312 *Petrology*  
 ESCI 331 *Structural Geology*  
 ESCI 332 *Sedimentology*  
 ESCI 334 *Geological and Geophysical Techniques*  
 ESCI 390 *Field Geology*  
 ESCI 442 *Exploration Geophysics*  
 or ESCI 446 *Solid Earth Geophysics*

**Math and Other Sciences**

MATH 101/102 *Single Variable Calculus I and II*  
 MATH 211 *Ordinary Differential Equations and Linear Algebra*  
 CHEM 121/122 *General Chemistry with Laboratory*  
 or CHEM 151/152 *Honors Chemistry with Laboratory*  
 PHYS 101 or 111 *Mechanics*  
 PHYS 102 or 112 *Electricity and Magnetism*  
 NSCI 230 *Computation in Natural Science*  
 or CAAM 210 *Introduction to Engineering Computation (C)*  
 or CAAM 211 *Introduction to Engineering Computation (F)*  
 or COMP 210 *Introduction to Principles of Scientific Computation*

**Required Electives.** Majors must also complete at least 12 hours in additional science and engineering courses at the 300 level or higher from an approved list; double majors must complete only 6 hours.

**Environmental Geology.** Students interested in careers in environmental geology are encouraged to take some of the following courses as electives.

ESCI 353 <i>Environmental Geochemistry</i>	ENVI 401 <i>Introduction to Environmental Chemistry</i>
ESCI 326/426 <i>Environmental Geology</i>	ENVI 406 <i>Introduction to Environmental Law</i>
ESCI 451 <i>Analysis of Environmental Data</i>	ENVI 412 <i>Hydrology and Watershed Analysis</i>
ESCI 454 <i>Geographic Information Science</i>	
ENVI 306 <i>Global Environmental Law and Sustainable Development</i>	

In addition, students may consider a second major in environmental science and engineering.

**Degree Requirements for B.S. in Geophysics**

For general university requirements, see Graduation Requirements (pages 16–18). Students completing the B.S. program should have a total of at least 129 hours at graduation. Students must complete the following courses.

**Earth Science**

ESCI 101 *The Earth*  
 or ESCI 102 *Evolution of the Earth*  
 or ESCI 107 *Oceans and Global Change*  
 or ESCI 108 *Crises of the Earth*  
 ESCI 105 *Introductory Lab for Earth Science*  
 ESCI 311 *Mineralogy and Optics*  
 or ESCI 332 *Sedimentology*  
 ESCI 331 *Structural Geology*

ESCI 334 *Geological and Geophysical Techniques*  
 ESCI 390 *Field Geology*  
 ESCI 461 *Seismology I*  
 ESCI 442 *Exploration Geophysics*  
 ESCI 444 *Reflection Seismic Data Processing Lab*  
 ESCI 446 *Solid Earth Geophysics*  
 ESCI 441 *Geophysical Data Analysis*  
 or ESCI 462 *Tectonophysics*  
 or ESCI 464 *Global Tectonics*

**Math and Other Sciences**

MATH 101/102 *Single Variable  
Calculus I and II*

MATH 211 *Ordinary Differential  
Equations and Linear Algebra*

MATH 212 *Multivariable Calculus*

CHEM 121/122 *General Chemistry  
with Laboratory*

or CHEM 151/152 *Honors Chemistry  
with Laboratory*

PHYS 101 or 111 *Mechanics*

PHYS 102 or 112 *Electricity and  
Magnetism*

PHYS 201 *Waves and Optics*

PHYS 231 *Elementary Physics Lab II*

NSCI 230 *Computation in  
Natural Science*

or CAAM 210 *Introduction to Engineering  
Computation (C)*

or CAAM 211 *Introduction to Engineering  
Computation (F)*

or COMP 210 *Introduction to Principles  
of Scientific Computation*

**Degree Requirements for B.A. in Geology**

For general university requirements, see Graduation Requirements (pages 16–18). Students completing the B.A. program should have a total of at least 120 hours at graduation. Students must complete the following courses.

**Earth Science**

ESCI 101 *The Earth*

or ESCI 102 *Evolution of the Earth*

or ESCI 107 *Oceans and Global Change*

or ESCI 108 *Crises of the Earth*

ESCI 105 *Introductory lab for  
Earth Science*

ESCI 311 *Mineralogy and Optics*

ESCI 312 *Petrology*

ESCI 331 *Structural Geology*

ESCI 332 *Sedimentology*

ESCI 334 *Geological and Geophysical  
Field Techniques*

**Math and Other Sciences**

MATH 101/102 *Single Variable  
Calculus I and II*

CHEM 121/122 or CHEM 151/152  
*General Chemistry I and II*

**6 credits from the following list**

BIOL 201/202 *Introductory Biology  
I and II*

BIOL 211, 213 *Biology Lab Modules*

MATH 211 *Differential Equations*

PHYS 101/102, 125/126 *Introductory  
Physics*

NSCI 230, CAAM 210/211, COMP 210  
*Programming*

**Required Electives.** Students must also complete at least 12 hours in additional courses in Science and Engineering (including ESCI) at the 200 level or higher, from an approved list.

**Undergraduate Independent Research**

The department encourages, but does not require, both geology and geophysics undergraduate majors to pursue independent supervised research in ESCI 481/482 Research in Earth Science. See also Honors Programs (page 33).

## Degree Requirements for M.A. and Ph.D. in Earth Science

All incoming students should have a strong background in physics, chemistry, and mathematics and should have, or should acquire, a broad grounding in fundamental earth sciences. The department encourages applications from well-qualified students with degrees in the other sciences and mathematics. For general university requirements, see Graduate Degrees (pages 60–65). The requirements for the M.A. and Ph.D. in earth science are similar, but the Ph.D. demands a significantly higher level of knowledge, research skills, and scholarly independence. Most students need at least two years beyond the bachelor's degree to complete the M.A. and at least two years beyond the M.A. degree for the Ph.D.

Candidates determine, with their major professor and advisory committee, a course of study approved by the department Graduate Committee, following the *Guidelines for Advanced Degrees* in the Department of Earth Science distributed to all incoming students. For both degrees, candidates must:

- Complete 20 semester hours of course work at the 400 level and above (or other approved courses), not including research hours
- Maintain a grade point average of 3.00 (B) or better
- Prepare a written thesis
- Pass an oral exam based on the proposal
- Produce a publishable thesis that represents an original contribution to science
- Defend the research and conclusions of the thesis in an oral examination

Students of exceptional ability with a bachelor's degree and department approval may work directly toward the Ph.D., in which case the course of study is equivalent to that required for both degrees; performance on the examinations and the thesis, however, should be at the level required for the Ph.D.

Because the graduate programs require full-time study and close interaction with faculty and fellow students, the department discourages students from holding full (or nearly full) time jobs outside the university. Outside employment must be approved by the chair.

**See ESCI (pages 347–352) in the Courses of Instruction section.**

# Economics

## The School of Social Sciences

### Chair

Peter Hartley

### Professors

Dagobert L. Brito  
 Bryan W. Brown  
 James N. Brown  
 John B. Bryant  
 Mahmoud El-Gamal  
 Malcolm Gillis  
 Peter Mieszkowski  
 Hervé Moulin  
 Robin C. Sickles  
 Gordon W. Smith  
 Ronald Soligo  
 George R. Zodrow

### Associate Professors

Suchan Chae  
 Marc Peter Dudey

### Assistant Professors

Yasar Barut  
 Eli Berman  
 Yoosoon Chang  
 Juan Carlos Cordoba  
 Kevin Hasker  
 Yuka Ohno

### Adjunct Professors

Bruce M. Lairson  
 John Michael Swint

### Adjunct Associate Professors

Charles E. Begley  
 Joon Park

*Degrees Offered:* B.A., M.A., Ph.D.

Undergraduates may major in either economics or mathematical economic analysis. The latter is recommended for students who intend to continue on to graduate work in economics or pursue a business or governmental job in which analytical and quantitative skills are required.

The eight major fields available for graduate study are econometrics, economic development, economic theory, industrial organization and regulation, international trade and finance, labor, macroeconomics and/or monetary theory, and public finance.

## Degree Requirements for B.A. in Economics or Mathematical Economic Analysis

**Economics Major.** All economics majors must complete a minimum of 10 courses with a grade point average of at least 2.00.

(1) These courses include 9 economics courses and 1 course in quantitative analysis as specified in (4) below. Major requirements are not reduced for multiple majors, although some courses can satisfy the requirements for more than one major. (Please note that students may not pursue a double major in economics and mathematical economic analysis.)

(2) The following courses are required for all economics majors:

- ECON 211 *Principles of Economics I*
- ECON 212 *Principles of Economics II*
- ECON 370 *Microeconomic Theory*
- And either ECON 355 *Financial Markets and Institutions*, ECON 375 *Macroeconomic Theory*, or ECON 455 *Money and Financial Markets*.



We suggest that economics majors take ECON 211 and 212 in the freshman year and take ECON 370 in the first semester of their sophomore year, leaving the junior and senior years for advanced electives. This plan is optional, but please note that failure to take prerequisite courses in earlier years may cause scheduling problems in later years.

(3) Given that item (2) has been satisfied, at least 3 of the remaining 5 required economics courses must be selected from the following courses in applied economics.

ECON 301 <i>History of Economic Analysis</i>	ECON 448 <i>Corporation Finance</i>
ECON 355 <i>Financial Markets and Institutions</i>	ECON 450 <i>World Economic and Social Development</i>
ECON 375 <i>Macroeconomic Theory</i>	ECON 451 <i>The Political Economy of Latin America</i>
ECON 415 <i>Labor Economics</i>	ECON 452 <i>Principles of Islamic Economics</i>
ECON 416 <i>Economic History of the U.S., 1700–1945</i>	ECON 455 <i>Money and Financial Markets</i>
ECON 417 <i>Comparative History of Industrialization</i>	ECON 461 <i>Urban Economics</i>
ECON 420 <i>International Economics</i>	ECON 472 <i>Introduction to Game Theory</i>
ECON 421 <i>International Finance</i>	ECON 480 <i>Environmental and Energy Economics</i>
ECON 430 <i>Comparative Economic Systems</i>	ECON 482 <i>Distributive Justice—A Microeconomic Approach</i>
ECON 435 <i>Industrial Organization</i>	ECON 483 <i>Public Finance—Tax Policy</i>
ECON 436 <i>Government Regulation of Business</i>	ECON 484 <i>Public Expenditure Theory and Social Insurance</i>
ECON 437 <i>Economics of Information, Common Property Resources, and Public Goods</i>	ECON 485 <i>Contemporary Economic Issues</i>
ECON 438 <i>Economics of Law I</i>	ECON 486 <i>Contemporary Economic Issues</i>
ECON 439 <i>Economics of Law II</i>	ECON 495 <i>Senior Seminar</i>
ECON 440 <i>Financial Theory</i>	
ECON 445 <i>Managerial Economics</i>	

Please note that if you count ECON 355, 375, or 455 as 1 of the required courses in item (2), you may not also count that course as 1 of the 3 courses satisfying item (3).

(4) The quantitative methods course may be selected from the following.

ECON 380 <i>Applied Economics</i>	CAAM 322 <i>Introduction to Real Analysis II</i>
ECON 382 <i>Probability and Statistics</i>	CAAM 335 <i>Matrix Analysis</i>
ECON 400 <i>Econometrics</i>	CAAM 336 <i>Differential Equations in Science and Engineering</i>
ECON 471 <i>Linear Programming</i>	CAAM 353 <i>Computational Numerical Analysis</i>
ECON 475 <i>Integer and Combinatorial Optimization</i>	CAAM 376 <i>Introduction to Management Science</i>
ECON 477 <i>Mathematical Structure of Economic Theory</i>	CAAM 378 <i>Introduction to Operations Research</i>
ECON 478 <i>Economic Applications of Mathematical Programming</i>	CAAM 400 <i>Case Studies in Applied Mathematics</i>
ECON 479 <i>Operations Research—Elementary Discrete Optimization</i>	CAAM 435 <i>Ordinary Differential Equations</i>
ACCO 305 <i>Introduction to Accounting</i>	CAAM 436 <i>Partial Differential Equations I</i>
CAAM 210 <i>Introduction to Engineering Computation</i>	CAAM 437 <i>Partial Differential Equations II</i>
CAAM 211 <i>Introduction to Engineering Computation</i>	
CAAM 321 <i>Introduction to Real Analysis</i>	

CAAM 451 <i>Numerical Linear Algebra</i>	COMP 440 <i>Artificial Intelligence</i>
CAAM 452 <i>Computational Methods for Differential Equations</i>	COMP 480 <i>Concrete Mathematics</i>
CAAM 453 <i>Numerical Analysis and Ordinary Differential Equations</i>	COMP 482 <i>Design and Analysis of Algorithms</i>
CAAM 454 <i>Optimization Problems in Computational Engineering and Science</i>	STAT 305 <i>Introduction to Statistics for Biosciences</i>
CAAM 460 <i>Optimization Theory</i>	STAT 310 <i>Probability and Statistics</i>
CAAM 471 <i>Linear Programming</i>	STAT 331 <i>Applied Probability</i>
CAAM 474 <i>Theory of Linear Inequalities</i>	STAT 381 <i>Introduction to Applied Probability</i>
CAAM 475 <i>Integer and Combinatorial Optimization</i>	STAT 400 <i>Econometrics</i>
CAAM 483 <i>Markov and Martingale Sequences—Renewal Processes</i>	STAT 410 <i>Introduction to Statistical Computing and Linear Models</i>
COMP 212 <i>Intermediate Programming</i>	STAT 421 <i>Introduction to Time Series Analysis</i>
COMP 312 <i>Program Construction</i>	STAT 431 <i>Mathematical Statistics</i>
COMP 314 <i>Applied Algorithms and Data Structures</i>	STAT 450 <i>Practicum in Statistical Modeling</i>
	STAT 486 <i>Market Models</i>

or an equivalent or higher-level course approved in advance by the chairman of the undergraduate committee.

(5) We strongly recommend that students take two semesters of calculus (MATH 101/102 or MATH 111/112) and a course in probability and statistics (ECON 382/STAT 310). Failure to take these courses will limit the range of electives available to the student.

(6) No more than 3 of the 9 economics courses may be transferred from other schools. Additional transfer credits in economics may count toward meeting university graduation requirements but not toward fulfillment of the departmental major requirements. The required course in quantitative analysis may also be transferred. AP credits do not count as transfer credits. In order to transfer either ECON 211 or ECON 212, the student must pass a qualifying examination. Students wishing to take either the ECON 211 or ECON 212 qualifying examination must apply to the economics department office in Baker Hall 266B. For additional information on transfer credits, consult “Procedures for Transfer Credit,” available in the economics department office.

(7) Students may graduate with “Honors in Economics” by achieving a B+ (3.33) average in all economics courses and doing two semesters of independent research (for details, consult “Economics 403/404—Senior Independent Research,” available in the Economics Department Office).

(8) For additional course information, consult “Economics Course Descriptions,” compiled by the Rice chapter of the Omicron Delta Epsilon National Economics Honor Society.

(9) Please note that it is primarily the responsibility of the student to satisfy all degree requirements, including the “University Credit Requirements” and “University Distribution Requirements” specified in the General Announcements. Consult with the appropriate departmental adviser, who must sign all registration forms for each major.

(10) Students who are considering either graduate work in economics or a business or governmental job in which analytical and quantitative skills are required should seriously consider obtaining the alternative major in mathematical economic analysis.

**Mathematical Economic Analysis Major.** Students majoring in mathematical economic analysis must take at least 16 courses.

(1) The major in mathematical economic analysis is designed for students who are interested in graduate work in economics or a business or governmental job in which analytical and quantitative skills are required.

(2) Students must choose between the 2 majors offered by the economics department; that is, students may not double major in economics and mathematical economic analysis. Major requirements are not reduced for students with multiple majors.

(3) A minimum of 16 courses (\*) in 6 areas is required. These courses must include:

**(a) 5 courses in Economic Principles:**

ECON 211 *Principles of Economics I*  
 ECON 212 *Principles of Economics II*  
 ECON 370 *Microeconomic Theory*

ECON 477 *Mathematical Structure of Economic Theory*  
 ECON 375 *Macroeconomic Theory*

**(b) 3 courses in Applied Economics, selected from:**

ECON 301 *History of Economic Analysis*  
 ECON 355 *Financial Markets and Institutions*  
 ECON 380 *Applied Economics*  
 ECON 415 *Labor Economics*  
 ECON 416 *Economic History of the U.S., 1700-1945*  
 ECON 417 *Comparative History of Industrialization*  
 ECON 420 *International Economics*  
 ECON 421 *International Finance*  
 ECON 430 *Comparative Economic Systems*  
 ECON 435 *Industrial Organization*  
 ECON 436 *Government Regulation of Business*  
 ECON 437 *Economics of Information, Common Property Resources, and Public Goods*  
 ECON 438 *Economics of Law I*  
 ECON 439 *Economics of Law II*  
 ECON 440 *Financial Theory*

ECON 445 *Managerial Economics*  
 ECON 448 *Corporation Finance*  
 ECON 450 *World Economic and Social Development*  
 ECON 451 *The Political Economy of Latin America*  
 ECON 452 *Principles of Islamic Economics*  
 ECON 455 *Money and Financial Markets*  
 ECON 461 *Urban Economics*  
 ECON 472 *Introduction to Game Theory*  
 ECON 480 *Environmental and Energy Economics*  
 ECON 482 *Distributive Justice—A Microeconomic Approach*  
 ECON 483 *Public Finance—Tax Policy*  
 ECON 484 *Public Expenditure Theory and Social Insurance*  
 ECON 485 *Contemporary Economic Issues*  
 ECON 486 *Contemporary Economic Issues*

**(c) 1 additional 400-level course in Applied Economics as listed in (b) or a course in advanced analysis, selected from:**

ECON 471 *Linear Programming*  
 ECON 475 *Integer and Combinatorial Optimization*  
 ECON 478 *Economic Applications of Mathematical Programming*  
 ECON 479 *Operations Research—Elementary Discrete Optimization*  
 CAAM 451 *Numerical Linear Algebra*  
 CAAM 452 *Computational Methods for Differential Equations*  
 CAAM 453 *Numerical Analysis and Ordinary Differential Equations*  
 CAAM 454 *Optimization Problems in Computational Engineering and Science*

CAAM 460 *Optimization Theory*  
 CAAM 471 *Linear Programming*  
 CAAM 474 *Theory of Linear Inequalities*  
 CAAM 475 *Integer and Combinatorial Optimization*  
 CAAM 483 *Markov and Martingale Sequences—Renewal Processes*  
 STAT 421 *Introduction to Time Series Analysis*  
 STAT 450 *Practicum in Statistical Modeling*  
 STAT 486 *Market Models*

or an equivalent or higher-level course approved in advance by the chair of the undergraduate committee.

**(d) 1 course in Econometrics:** ECON 400 *Econometrics*

**(e) 5 courses in Mathematics and Statistics:**

- MATH 101 *Single Variable Calculus I*
- MATH 102 *Single Variable Calculus II*
- MATH 211 *Ordinary Differential Equations and Linear Algebra*
- MATH 355 *Linear Algebra* or CAAM 335 *Matrix Analysis*
- MATH 212 *Multivariable Calculus* or MATH 221 *Honors Calculus III*
- ECON 382/STAT 310 *Probability and Statistics*  
or STAT 410 *Introduction to Statistical Computing and Linear Models*  
or STAT 431 *Mathematical Statistics*

**(f) 1 Senior Seminar or Senior Research:** ECON 495/496 *Senior Seminar* or  
ECON 403/404 *Senior Independent Research*

(4) No more than 3 of the required economics courses and 2 of the required Mathematics (or computational and applied mathematics or statistics) courses may be transferred from other schools. Additional transfer credits in economics, mathematics, computational and applied mathematics or statistics may count toward meeting university graduation requirements but not toward fulfillment of the departmental major requirements. AP credits do not count as transfer credits. In order to transfer either 211 or 212, the student must pass a qualifying examination. Students wishing to take either the 211 or 212 qualifying examinations must apply to the economics department office in Baker Hall 266B. For additional information on transfer credits, consult “Procedures for Transfer Credit,” available in the economics department office.

(5) Students may graduate with “Honors in Mathematical Economic Analysis” by achieving a B+ (3.33) average in the 16 courses required for the major and any other economics electives taken.

(6) For additional course information, consult “Economics Course Descriptions,” compiled by the Rice chapter of the Omicron Delta Epsilon National Economics Honor Society.

(7) Please note that it is primarily the responsibility of the student to satisfy all degree requirements, including the “University Credit Requirements” and “University Distribution Requirements” specified in the General Announcements. Consult with the appropriate departmental adviser, who must sign all registration forms for each major.

### **Substituting Economics Graduate Courses for Undergraduate Courses.**

Undergraduate majors satisfying the course prerequisites may, subject to the approval of the instructor and of the departmental undergraduate program chair, substitute certain graduate courses for undergraduate courses. Only highly motivated students with excellent aptitudes for economics and a strong background in mathematics should consider making such substitutions. Typically, but not necessarily, such students will be majors in mathematical economic analysis. Permitted substitutions are as follows:

- ECON 501 for ECON 372 (if student has completed ECON 211 or ECON 370 at Rice)
- ECON 502 for ECON 375 (if student has completed ECON 212 at Rice)
- ECON 504 for ECON 382
- ECON 510 for ECON 400
- Furthermore, ECON 505 and ECON 508 also may be taken by undergraduates and may be used toward satisfying MTEC requirements. Specifically, ECON 505 could be used as 1 of the courses in the applied economics category or in the advanced analysis category, while ECON 508 could be used only in the advanced analysis category.

Note that this set of substitutable graduate courses includes 6 of the 7 courses required during the first year of the Ph.D. program at Rice. Accordingly, such advanced course work would be excellent preparation for graduate study in economics or in some related field such as finance. Taking such graduate courses should also open more opportunities for the student who will be seeking employment immediately after graduation.

### **The Five-Year M.A. Program**

Advanced undergraduate students can, subject to the approval of the departmental five-year M.A. adviser, enter our five-year M.A. program. In this program, a student who has taken advantage of the full menu of graduate course substitutions available could, with an additional year of study at Rice, earn an M.A. in economics.

To obtain the M.A. degree, students must satisfy all of the requirements for Ph.D. candidacy. In particular, students must pass general examinations in microeconomic theory and in macroeconomic theory and econometrics, must pass an examination in a specialized field of study in economics, and must complete an original research project (a dissertation prospectus) that could be developed into a Ph.D. dissertation under the supervision of a faculty member. This work could be an extension of a paper written as a senior independent research project (ECON 403/404). In some cases, at the discretion of the independent research adviser, the paper produced in ECON 403/404 may fulfill this requirement. Finally, the first-year graduate requirement to take ECON 507 Mathematical Economics would be waived with the approval of the departmental five-year M.A. adviser.

Note that any student who subsequently decides to enter the economics Ph.D. program at Rice would be given graduate credit for all 500 level economics courses completed while an undergraduate. The completion of the Ph.D. dissertation typically requires at least one additional year of research (but no additional courses) beyond the M.A. degree.

Students who opt for the five-year M.A. degree program will have different backgrounds and interests on entering Rice and will choose to pursue this option at different stages in their academic careers. The following illustrates two (of many) possible paths to satisfying the MTEC major requirements, while at the same time completing all of the requirements for the M.A. degree over a five-year period.

### **Courses: Sample Path One**

The student enters with AP credit for ECON 211/212 and MATH 101/102, and has an early interest in the five-year M.A. program.

#### ***Freshman Year***

ECON 372, 375, and MATH 211/212

#### ***Senior Year***

ECON 403/404 and ECON 508

#### ***Sophomore Year***

ECON 501; 1 course from Applied Economics category; and MATH 355 or CAAM 310

- Fifth year—Complete all remaining graduate courses and pass all remaining examinations required to achieve Ph.D. candidacy.

#### ***Junior Year***

ECON 502, 504, 505, 510, and 1 course from Applied Economics category

(Note that with AP credit for MATH 101/102, but not for ECON 211/212, the student could substitute ECON 211/212 for ECON 372 and ECON 375 in the freshman year.)

## Courses: Sample Path Two

The student has no relevant AP credit and/or decides to enter the five-year M.A. program only near the end of the sophomore year.

### *Freshman Year*

ECON 211/212 and MATH 101/102

### *Sophomore Year*

ECON 372, 375, and 1 course from applied economics category;  
MATH 211/212

### *Junior Year*

ECON 501, 502, 505, 508;  
MATH 355 or CAAM 310

### *Senior Year*

ECON 504, 510, 403/404, and 1 course from applied economics category

### *Fifth Year*

Complete all remaining graduate courses and pass all remaining examinations required to achieve Ph.D. candidacy.

## Degree Requirements for Ph.D. in Economics

**Preparation for Ph.D. Program.** Applicants to the Ph.D. program should have had at least two semesters in calculus and one in linear algebra. Students who have not met these requirements may complete these prerequisites as Class III students (page 79) before being admitted to the graduate program. All applicants are required to take the Graduate Record Exam.

**Requirements.** For general university requirements, see Graduate Degrees (pages 60–65). Candidates for the Ph.D. degree usually spend from two to two and one-half years in full-time course work and at least one year writing the dissertation; four to five years is a reasonable goal for completing the program. For the Ph.D., students must:

- Complete an approved program of at least 14 courses not including ECON 593/594 *Workshop in Economics I* and ECON 595/596 *Workshop in Economics II*
- Complete an approved program of at least 4 sections of ECON 593/594 *Workshop in Economics I* and ECON 595/596 *Workshop in Economics II*
- Perform satisfactorily on written general examinations in economic theory and econometrics
- Demonstrate proficiency in a major field by taking the relevant courses in that field and performing satisfactorily on a written examination
- Complete and defend orally a doctoral dissertation setting forth in publishable form the results of original research

**See ECON (pages 308–314) in the Courses of Instruction section**

## Education

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### The School of Humanities

#### Chair

Meredith Skura

#### Professors

Linda M. McNeil

Ronald L. Sass

#### Adjunct Professor

Roland B. Smith, Jr.

#### Lecturers

Eileen Coppola

Elnora Harcombe

Lissa Heckelman

Anne Papakonstantinou

Carolynne White

Heidi Ziemer

#### Adjunct Lecturer

Wallace Dominey

#### *Degrees Offered:*

Secondary Teaching Certificate in conjunction with B.A. in major field, M.A.T.

Students in the teacher education program at Rice show a commitment to teaching, a strong record of scholarship in their subject areas, and promise as thoughtful, engaging teachers. The program emphasizes a sound liberal or general education; an extensive knowledge of the subject(s) or area(s) to be taught; professional knowledge, including the relevant historical, philosophical, social, and psychological bases of education; and skills in classroom teaching, which include working with both children and adults. Graduates emerge from the program fully prepared for the teaching profession, trained in a diversity of teaching styles and methods.

Rice offers three teacher education plans: (1) a secondary teaching certificate in combination with the undergraduate degree in the elected subject field(s), (2) a Master of Arts in Teaching (M.A.T.), and (3) a postbaccalaureate plan for Class III students (page 79) that involves taking those courses and state examinations needed for certification but that does not confer a degree. All three plans include apprenticeship teaching in the Rice Summer School for Middle and High School Students. While maintaining its academic integrity, the Rice program complies with state of Texas certification requirements. Students seeking additional information about the teacher education program are encouraged to meet with education department faculty.

**Texas Teaching Credential.** Rice is approved by the state of Texas to offer teacher preparation programs in the following fields: art, biology, chemistry, computer science, earth science, economics, English, French, general science, geology/earth science, German, health sciences, history, Latin, life sciences, mathematics, physical education, physical science, physics, political science, psychology, Russian, social studies, sociology, and Spanish.

After satisfactory completion of the Rice program, which includes the state-mandated ExCET examinations, students are recommended for a Texas teaching credential. The Texas Education Agency then awards a Texas Provisional Teaching Certificate (Grades 6–12).

**Student Teaching, Apprenticeship (Plan A) and Internship (Plan B)** programs are available. Unpaid *apprenticeships* are for undergraduates who wish to complete the teacher education program in four years and two six-week summer sessions. Candidates enroll for the summer sessions following their junior and senior years. Apprentices create and teach courses under the supervision of experienced master teachers and university faculty in the Rice Summer School for Middle and High School Students.

Paid *internships* are undertaken by Master of Arts in Teaching candidates, by some Class III students, and by undergraduates who begin earning certification in their senior year. Under this plan, students serve one apprenticeship in the Rice Summer School and are then supervised through their first semester of a full-time, paid internship in a neighboring, cooperating school system. Permission for the internship is contingent upon completing a successful apprenticeship.

## Requirements for Secondary Teaching Certificate

**Admission.** Students may apply to the Rice University Education Department for admission to the teacher education program if they show:

- Attainment of junior standing at Rice (bachelor's degree for M.A.T. candidates) by the semester of admission to the program
- Grades of C- or better in all semester hours attempted in their teaching field(s), with an overall grade point average of 2.5 or better
- Evidence of adequate physical vigor to perform as a teacher in a classroom
- Exemption or satisfactory scores on all required preprofessional skills tests
- A completed Plan of Study approved by department representatives and the major field adviser before registration for the junior year

**Students should check with the education faculty for detailed program requirements and further options that will be available under the revised requirements.** These are expected to go into effect for new majors during the 2001–2002 academic year.

**Completion of Program.** To complete the program, students must:

- Be exempted from or pass the state's Texas Academic Skills Program (TASP) exam prior to enrolling in any education courses
- Select one of the following plans and complete the required semester hours:
  - Plan I (one teaching field): at least 36 approved hours in subject field with at least 12 hours in a supporting field
  - Plan II (two fields for undergraduates or at least one field for M.A.T. or Class III students): at least 24 approved hours in *each* field, including at least 12 semester hours of upper-level work in *each* field
  - Plan IV (related fields): at least 48 approved hours in composite field (general science or social studies), including at least 18 hours of upper-level work
- Complete 18 hours in professional education courses as follows:
  - either: EDUC 301 or 501 *Historical and Philosophical Foundations of Education* or EDUC 330 or 530 *The American High School*
  - EDUC 305 or 505 *Psychology of Education*
  - EDUC 420 *Curriculum Development*
  - 3 hours in the appropriate seminars in teaching methods
  - 6 hours in student teaching (see following)



- Satisfy a state requirement for computer literacy
- Complete all university and program requirements specified for undergraduates, M.A.T. candidates, or nondegree (Class III) candidates
- Make grades of C- or better in all teaching field courses and education courses (B- or better for M.A.T. students)
- Pass appropriate ExCET exams

### **Apprenticeship Plan (Plan A)**

(For students beginning certification in junior year and for some Class III students)

#### **Junior Year**

EDUC 301 *Historical and Philosophical Foundations of Education*

or EDUC 330 *The American High School*

EDUC 305 *Educational Psychology*

EDUC 410–416 *Relevant seminar(s) in teaching methods*

EDUC 420 *Curriculum Development*

EDUC 440 *Supervised Teaching: Summer School*

#### **Senior Year**

EDUC 420 *Curriculum Development*

#### **After Graduation**

EDUC 440 *Supervised Teaching: Summer School*

### **Internship Plan (Plan B)**

(For students beginning certification in senior year, for some Class III students, and for M.A.T. students)

#### **Before Graduation**

EDUC 301/501 *Historical and Philosophical Foundations of Education*

or EDUC 330/530 *The American High School*

EDUC 305/505 *Educational Psychology*

EDUC 410–416 *Relevant seminar(s) in teaching methods*

EDUC 420 *Curriculum Development*

#### **After Academic Year**

EDUC 440 *Supervised Teaching: Summer School*

EDUC 540 *Internship* (paid internship in the fall in secondary school)

## **Requirements for M.A.T.**

**Admission.** Applicants must have a bachelor's degree, scholarly ability, and an interest in teaching, and they must have taken the Graduate Record Examination (GRE) aptitude test. Department faculty review each application. A limited number of tuition waivers is available. See Admission to Graduate Study (pages 65–66). Admitted students must pass or be exempted from the state's Texas Academic Skills Program (TASP) exam *prior* to enrolling in any education courses.

**Degree Requirements.** For general university requirements, see Graduate Degrees (pages 60–65). The M.A.T. is a professional degree program for students who want to qualify for secondary school teaching following a liberal arts education. Most candidates entering the program have had no professional education courses. By completing the program, candidates fulfill all requirements for a Texas Provisional Teaching Certificate. To earn the professional M.A.T. degree, students must complete, with grades of B- or higher, at least 33 semester hours (the need to remove deficiencies may require additional courses for certification). Requirements are as follows:

- Courses in secondary school educational theory, teaching strategies, educational practice, and evaluation
- Graduate or upper-level courses in the relevant teaching field(s) taken at Rice
- Supervised full-time teaching for one summer in the Rice Summer School for middle and high school students, including design and implementation of courses, teaching, and evaluation
- Approval to begin an internship, based on a successful summer school teaching experience
- Supervised teaching internship for one semester in a cooperating secondary school, including the accompanying seminar

The cooperating school districts pay a regular salary for internship teaching, which covers the small cost of graduate tuition.

### **Requirements for Class III Certification**

A nondegree (Class III) plan for teacher certification is available to those who hold a B.A. but do not choose to pursue a graduate degree. Interested students should direct their queries to the Office of Graduate Studies, which approves the applicant for admission to Rice. The Department of Education then reviews the application. Candidates must fulfill requirements for M.A.T.

**See EDUC (pages 315–318) in the Courses of Instruction section.**

# Electrical and Computer Engineering

## The George R. Brown School of Engineering

### Chair

Don H. Johnson

### Professors

Behnaam Aazhang  
 Athanasios C. Antoulas  
 Richard G. Baraniuk  
 John W. Clark, Jr.  
 Naomi J. Halas  
 Don H. Johnson  
 J. Robert Jump  
 Erzsébet Merényi  
 Frank K. Tittel  
 William L. Wilson, Jr.

James F. Young

### Professors Emeriti

James Boyd Pearson, Jr.  
 Thomas Avelyn Rabson

### Associate Professors

Joseph R. Cavallaro  
 Peter J. Varman

### Assistant Professors

Edward W. Knightly  
 Junichiro Kono  
 Daniel Mittleman  
 Robert D. Nowak  
 Vijay Pai

### Adjunct Professors

Richard Barton  
 Akhil Bidani  
 John Byrne  
 Wayne Giles  
 Thomas Harman  
 Dirar Khoury  
 T. Randall Lee  
 Gerd Marowsky  
 Alexander Oraevsky  
 Peter Saggau  
 Markus Sigrist  
 C. Tsuchitani

### Faculty Fellows

Hyeokho Choi  
 Rudolf H. Riedi

### Lecturers

Richard P. Massey  
 James B. Sinclair  
 James D. Wise

*Degrees Offered:* B.A., B.S.E.E., M.E.E., M.S., Ph.D.

The electrical and computer engineering department strives to provide high quality degree programs that emphasize fundamental principles, respond to the changing demands and opportunities of technology, challenge the exceptional abilities of Rice students, and prepare these students for roles of leadership in their chosen careers.

In support of this goal, the electrical and computer engineering department's objectives are to provide its undergraduate students with:

- A solid foundation in the fundamentals of electrical and computer engineering, mathematics, and science, enabling them to adapt easily to technological developments that will occur during their careers
- An in-depth exposure to one area of electrical and computer engineering, emphasizing its relationship to the basic framework of the discipline and to other appropriate topics outside that framework
- Courses and projects that actively involve them in their own education and enhance their ability to formulate and solve real-world design and research problems
- A broad education outside of engineering and science that emphasizes the role of electrical and computer engineering in society and builds the leadership skills necessary to deal with the increasing impact of technology

Graduate and undergraduate programs in electrical and computer engineering offer concentrations in areas that include system and control theory, bioengineering, communications, quantum electronics and lasers, computer systems, and electronic materials, devices, and circuits. Bioengineering is primarily a graduate program, although undergraduates may take introductory courses in this field as electives or as part of their specialization area courses.

**Undergraduate Program.** The department offers two undergraduate degrees, the Bachelor of Arts (B.A.) and the Bachelor of Science in Electrical Engineering (B.S.E.E.). The B.A. program is highly flexible, permitting a student to tailor the program to his or her interests, be they broad or highly focused. The B.S.E.E. degree is approved by the Accreditation Board for Engineering and Technology (ABET); requires more scientific and professional courses, for a total of at least 134 semester hours; and has fewer electives. Outstanding students interested in careers in research and teaching may enter graduate school after either bachelor degree. Both degrees are organized around a core of required courses and a selection of elective courses from five specialization areas. Each student's program must contain a depth sequence in one area and courses from at least two areas to provide breadth. The specialization electives provide a flexibility that can be used to create a focus, such as optical communications, that crosses traditional areas. Because of the number of options, students should consult early with departmental advisers to plan a program that meets their needs.

The B.A. degree provides a basic foundation in electrical and computer engineering that the student can build upon to construct a custom program. Because of its flexibility and large number of free electives, the B.A. can be combined easily with another major to create an interdisciplinary program. This may be particularly appropriate for students planning further study in law, business, or medicine.

The B.S.E.E. is the usual degree taken by those students planning a career of engineering practice. It is accredited by ABET and can reduce the time required to become a licensed professional engineer. Accreditation and professional licensing are important for some careers, and many states require licensure for those providing engineering services directly to the public, for example, as a consultant. The program for the B.S.E.E. degree requires greater depth than the B.A. degree but still provides considerable flexibility. Students who place out of required courses but who do not have credit must substitute other approved courses *in the same area*.

The requirements for the two degrees are grouped into four categories, listed below. The specific courses required for each degree are listed in the section for that degree.

### **Basic Mathematics and Science Courses**

MATH 101 *Single Variable Calculus I*  
 MATH 102 *Single Variable Calculus II*  
 MATH 211 *Ordinary Differential Equations and Linear Algebra*  
 MATH 212 *Multivariable Calculus*  
 PHYS 101 *Mechanics*  
 PHYS 102 *Electricity and Magnetism*  
 CHEM 121 *General Chemistry*  
 PHYS 201 *Waves and Optics*

### **Core Courses**

ELEC 241 *Fundamentals of Electrical Engineering I*  
 ELEC 242 *Fundamentals of Electrical Engineering II*  
 ELEC 301 *Introduction to Signals*  
 (or COMP 212 *Intermediate Programming*)  
 ELEC 305 *Introduction to Physical Electronics*  
 ELEC 320 *Introduction to Computer Organization*  
 ELEC 326 *Digital Logic Design*  
 ELEC 391 *Professional Issues in Electrical Engineering*  
 ELEC 331 *Applied Probability*

**Restricted Electives****Computation**

CAAM 210 *Introduction to Engineering Computation*

CAAM 211 *Introduction to Engineering Computation*

COMP 210 *Introduction to Principles of Scientific Computation* (COMP 210 is a prerequisite for many other computer courses.)

**Laboratory**

ELEC 201 *Introduction to Engineering Design*

ELEC 303 *Systems Laboratory*

ELEC 327 *Digital Logic Design Laboratory*

ELEC 423 *VLSI Design II*

ELEC 433 *Communications Systems Lab*

ELEC 465 *Physical Electronics Lab*

ELEC 490 *Electrical Engineering Projects*

**Specialization Areas.** The following groups of courses focus on specific areas within electrical and computer engineering. The systems area involves the study of processing and communicating signals and information through systems of devices, control and robotics, signal and image processing, and communications. The computer engineering area provides a broad background in computer systems engineering, including computer architecture, hardware engineering, software engineering, and computer systems performance analysis. The physical electronics area encompasses studies of electronic materials, semiconductor and optoelectronic devices, lasers, and photonics.

**Bioengineering**

ELEC 481 *Computational Neuroscience*

ELEC 482 *Physiological Control Systems*

ELEC 483 *Introduction to Biomedical Instrumentation and Measurement Techniques*

**Computer Engineering**

COMP 212 *Intermediate Programming*

COMP 311 *Programming Languages*

ELEC 322 *Applied Algorithms and Data Structures*

ELEC 421 *Operating Systems and Concurrent Programs*

COMP 410 *Software Construction Methodology*

COMP 413 *Distributed Program Construction*

COMP 422 *Parallel Computing*

ELEC 422 *VLSI Design*

ELEC 424 *Computer Systems Design*

ELEC 425 *Computer Systems Architecture*

ELEC 426 *Digital Systems Design*

ELEC 428 *Computer Systems Performance*

ELEC 429 *Introduction to Computer Networks*

**Systems: Control, Communications, and Signal Processing**

ELEC 301 *Introduction to Signals*

ELEC 302 *Introduction to Systems*

ELEC 430 *Communication Theory and Systems*

ELEC 431 *Digital Signal Processing*

ELEC 436 *Control Systems I*

**Electronic Circuits and Devices**

ELEC 342 *Electronic Circuits*

ELEC 427 *Pulse and Digital Circuits*

ELEC 435 *Electromechanical Devices and Systems*

ELEC 442 *Advanced Electronic Circuits*

ELEC 443 *Power Electronic Circuits*

ELEC 462 *Semiconductor Devices*

**Quantum Electronics**

PHYS 202 *Quantum Mechanics*

ELEC 306 *Electromagnetic Fields and Devices*

ELEC 361 *Electronic Materials and Quantum Devices*

ELEC 462 *Semiconductor Devices*

ELEC 463 *Lasers and Photonics*

ELEC 465 *Physical Electronics Practicum*

ELEC 563 *Introduction to Solid-State Physics*

The department may add or delete courses in the areas. In addition, graduate courses and equivalent courses from other departments may be used to satisfy area requirements with permission; consult with departmental advisers for the latest information. A course can satisfy only one program requirement. ELEC 491/492 may be used to satisfy requirements in any area, depending on the nature of the design project.

### Degree Requirements for B.S. in Electrical Engineering

For general university requirements, see Graduation Requirements (pages 16–18). Students completing the B.S.E.E. program must have a total of at least 134 semester hours in order to graduate.

**Basic Mathematics and Science.** Students must take all of the courses listed under basic mathematics and science courses. They must also take additional math and science courses, approved by the department, to bring their total to 32 hours.

**Core Courses.** Students must take all of the courses listed under core courses, except that they need take only 1 of ELEC 301 and COMP 212.

**Restricted Electives.** 1 computation course and 1 laboratory course.

**Specialization Areas.** Students in the B.S.E.E. program choose courses from 2 or more specialization areas. Students must take at least 7 specialization courses, including at least 4 courses in one area and courses from at least 2 different areas. Students taking either ELEC 301 or COMP 212 to satisfy a core course requirement may not use that course to satisfy a specialization area requirement. Because of the number of options, students should consult early with department advisers to plan a program that meets their needs. Students going on to a technical career or graduate school may need to use unrestricted electives to create a coherent program.

**Design Component.** At least 1 of the specialization area courses must be an approved design course.

### Degree Requirements for B.A. in Electrical and Computer Engineering

For general university requirements, see Graduation Requirements (pages 16–18). Students completing the B.A. program must have a total of at least 120 semester hours at graduation.

**Basic Mathematics and Science.** Students in the B.A. program must take all of the courses listed under basic mathematics and science courses, with the following exceptions: CHEM 121 is not required, and MATH 355 Linear Algebra, MATH 381 Introduction to Partial Differential Equations, or CAAM 353 Computational Numerical Analysis may be taken instead of ELEC 331.

**Core Courses.** All of the courses listed under core courses are required for the B.A. degree, except for COMP 212, ELEC 301, and ELEC 391. Students also have the following options: CAAM 353 Computational Numerical Analysis may be taken instead of MATH 212, and CHEM 121 General Chemistry may be taken instead of PHYS 201.

**Restricted Electives.** 1 computation course and 1 laboratory course.

**Specialization Areas.** A 2-course sequence in 1 area and courses from at least 2 areas.

## **Degree Requirements for M.E.E., M.S., and Ph.D. in Electrical and Computer Engineering**

For general university requirements, see Graduate Degrees (pages 60–65). Students should also consult department advisers for specific courses of study.

**Master's Degree Programs.** A candidate for the professional **M.E.E.** degree must complete an approved sequence of 10 advanced courses, totaling at least 30 hours. At least 4 of these must be technical courses at the 500 level or higher. At least 7 of the courses must be technical courses at the 400 level or higher. All 10 courses must be at the 300 level or higher and 2 credit hours or more. Specialization is possible in the general areas of bioengineering, signal processing, communication and control theory, electro-optics and physical electronics, and computer science and engineering. A candidate for the **M.S.** degree must complete both an approved course of study and an approved research program, culminating in an acceptable thesis. (The M.S. degree is not a terminal degree but part of the Ph.D. program.)

A joint M.B.A./Master of Engineering degree is also available in conjunction with the Jesse H. Jones Graduate School of Management.

**Ph.D. Program.** Candidates should expect to spend a minimum of three academic years of graduate study in this program. Normally, candidates complete the requirements for an M.S. degree as part of the Ph.D. program. For the Ph.D., students must:

- Obtain high standing in an approved course program
- Perform satisfactorily on qualifying examinations
- Complete a satisfactory dissertation of independent and creative research
- Pass a final oral examination

**See ELEC (pages 319–329) in the Courses of Instruction section.**

# English

## The School of Humanities

### Chair

Susan Wood

### Professors

Jane Chance  
 Terrence Arthur Doody  
 Linda P. Driskill  
 Alan Grob  
 J. Dennis Huston  
 Walter Whitfield Isle  
 Helena Michie  
 David Minter  
 Wesley Abram Morris  
 Robert L. Patten  
 William Bowman Piper  
 Meredith Skura  
 Edward A. Snow

### Associate Professors

José F. Aranda, Jr.  
 Scott S. Derrick  
 Lucille P. Fultz  
 Colleen R. Lamos  
 Caroline Levander  
 Susan Lurie

### Assistant Professors

Krista Comer  
 Sarah Ellenzweig  
 Betty Joseph

### Lecturers

Jill “Thad” Logan  
 Marsha Recknagel  
 Mary L. Tobin

*Degrees Offered:* B.A., M.A., Ph.D.

The undergraduate program offers opportunities for students to improve their writing skills and explore literature while learning to appreciate it critically. The graduate program in English offers concentrations in all fields of British and American literature and literary theory.

### Degree Requirements for B.A. in English

For general university requirements, see Graduation Requirements (pages 16–18). Students majoring in English must complete 36 semester hours in English with at least 24 hours in courses at the 300 level or above. A double major requires 30 hours in English with at least 18 hours in the upper-level courses. HUMA 101 and 102 may be counted toward the English major. All English majors must take the following:

- ENGL 210 *Major British Writers: Chaucer to 1800*
- ENGL 211 *Major British Writers: 1800 to Present*
- ENGL 260 *Introduction to the Study of American Literature*
- 3 hours in upper-level courses in each of the following areas: (1) English literature before 1800, (2) English literature after 1800, and (3) American literature

The department recommends that all English majors take courses in English and American history and, if they plan to do graduate work, at least 6 hours of upper-level courses in a foreign language.



## Degree Requirements for M.A. and Ph.D. in English

For general university requirements, see graduate Degrees (pages 60-65). As part of their training, graduate students participate in both the teaching and research activities of the department. Upon entering, students will be assigned a Program Advisory Committee (PAC), consisting of two or three faculty members. In consultation with their PAC, students will design their own individualized program structured by the minimal requirements listed below. For more detailed information, please ask for a copy of the Department's Program Outline.

**M.A. Program.** The English department does not have an M.A. program, but offers the M.A. degree to those Ph.D. students who have achieved candidacy and are in the process of completing their doctorate, and to qualified Ph.D. students who leave the program before completing their doctorate. To receive an M.A. students must:

- Satisfactorily complete at least 30 hours of graduate work in English at Rice University. Courses must be those that count towards the Ph.D. in English. These include: courses numbered in the 500s and 600s in the English department excluding 510, 601/602, 603/604; up to 2 approved graduate or equivalent courses taken in other departments; and up to 2 approved courses in the English department numbered 400 and above. Courses taken to fulfill the language requirement are excluded. Students must satisfactorily complete ENGL 600 and distribution requirements for the Ph.D. (See below.)
- Satisfactorily complete the language requirement either by passing a department-approved proficiency exam, or by giving evidence of satisfactory completion of a three-semester hour course at the junior or senior level in the literature of a foreign language, not in translation, taken at Rice or elsewhere. These courses do not count toward the 30-hour requirement.
- Satisfactorily complete 2 Teaching Assistantships (ENGL 601/602). These do not count toward the 30-hour requirement.

**Ph.D. Program.** To gain admission to Ph.D. candidacy, students must satisfy the first seven of the following requirements, and they must receive approval for their dissertation prospectus from the Department's Graduate Committee. To earn a Ph.D. in English, candidates must also complete the last 2 requirements. Students must:

(1) Satisfactorily complete at least 33 hours of course work plus ENGL 510, exclusive of the thesis. Courses can include: graduate courses in the English department numbered 500 to 600, excluding 510, 601/602, 603/604; up to 2 approved undergraduate courses in the English department; and up to 2 approved courses in another department. Courses taken to satisfy the language requirement do not count towards the 33-hour requirement.

(2) Satisfactorily complete the following 2 required courses: ENGL 600, Professional Methods, and ENGL 605, Third-Year Writing Workshop. These count toward the 33-hour requirement.

(3) Satisfactorily complete the distribution requirement, which consists of 2 approved courses on literature before 1800 and 2 after 1800. These count toward the 33-hour requirement.

(4) Satisfactorily complete the language requirement, either by passing a department-approved proficiency exam, or by giving evidence of satisfactory completion of 6 semester hours at the junior or senior level in the literature of the foreign language, not in translation, taken at Rice or elsewhere. These courses do not count toward the 33-hour requirement.

(5) Satisfactorily complete the teaching requirement by serving twice as a teaching assistant, by completing ENGL 510/511 Pedagogy, and by teaching an introductory course designed in conjunction with the instructor of ENGL 510. ENGL 510 does not count toward the 33-hour requirement.

(6) Pass a six-hour written preliminary examination focusing on two lists of books, one representing the full range of a literary period as defined by the student and his or her preliminary committee, the other a representing a second literary period, a single author, a genre traced over a period of time more comprehensive than that covered by the first list, or a particular theoretical or critical approach studied with reference to its own history and traditions as well as to the historical field of the first exam.

(7) Complete a dissertation prospectus that proposes a topic and an approach, offers a context to the topic in terms of work already done, that offers an outline of chapters or sections, and that includes a substantial bibliography.

(8) Complete a dissertation that demonstrates a capacity for independent and original work of high quality.

(9) Pass an oral exam on the dissertation and related fields of study.

**Financial Support.** Within the limits of available funds, qualified students may receive graduate scholarships or fellowships for up to four years. To qualify for this continuing financial aid, students must be approved for candidacy for the Ph.D. by the beginning of their seventh semester at Rice (fifth semester for those entering with an M.A.).

**See ENGL (pages 330–345) in the Courses of Instruction section.**

## Environmental Programs

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### Environmental Programs Committee

Walter Whitfield Isle, *Chair* (English)

Katherine Bennett Ensor (*Statistics*)

Mark R. Wiesner (*Civil and  
Environmental Engineering*)

Donald Ostdiek (*Policy Studies*)

Paul A. Harcombe (*Ecology and  
Evolutionary Biology*)

Ronald L. Sass (*Ecology and  
Evolutionary Biology*)

Dale S. Sawyer (*Earth Science*)

Robin Sickles (*Economics*)

Gordon G. Wittenberg (*Architecture*)

The Environmental Programs Committee coordinates courses and curricula on environmental topics offered in the Schools of Engineering, Natural Sciences, Social Sciences, and Humanities, and serves in a broad advisory capacity to the administration on interdisciplinary research and integrated program development in the environmental area. Students may take one of several environmental tracks as part of a second major. Two tracks are offered in the Department of Civil and Environmental Engineering: one in environmental engineering sciences and one in environmental science. A third track, in environmental policy, is offered through the policy studies second major. For a full description of course requirements in each track, students should refer to the pages for the Departments of Civil and Environmental Engineering (pages 119–125) and Policy Studies (pages 213–216). Rice is a partner with Columbia University at Biosphere 2, where Columbia offers a semester's study in environmental science and policy. Interested students should apply through the Programs Committee. Sophomore year would be the optimal time for attending.

### Faculty

The following faculty participate in interrelated environmental undergraduate and graduate degree programs, courses, and research programs:

John B. Anderson (*Earth Science*)

Andrew R. Barron (*Chemistry and  
Materials Science*)

Philip B. Bedient (*Civil and  
Environmental Engineering*)

James B. Blackburn (*Civil and  
Environmental Engineering*)

Jean-Yves Bottero (*Civil and  
Environmental Engineering/  
Geosciences Environment  
Laboratory, France*)

Janet Braam (*Biochemistry and  
Cell Biology*)

Vicki L. Colvin (*Chemistry*)

Krista Comer (*English*)

Dennis Cox (*Statistics*)

André W. Droxler (*Earth Science*)

Katherine Bennett Ensor (*Statistics*)

Arthur A. Few (*Physics and  
Environmental Science*)

Frank M. Fisher (*Ecology and  
Evolutionary Biology*)

Matthew Fraser (*Civil and  
Environmental Engineering*)

Malcom Gillis (*Economics*)

Paul A. Harcombe (*Ecology and  
Evolutionary Biology*)

Peter Hartley (*Economics*)

George J. Hirasaki (*Chemical  
Engineering*)

Joseph B. Hughes (*Civil and  
Environmental Engineering*)

Walter Whitfield Isle (*English*)

Marek Kimmel (*Statistics*)

Stephen L. Klineberg (*Sociology*)

William P. Leeman (*Earth Science*)

Roderick J. McIntosh (*Anthropology*)

Lisa Meffert (*Ecology and  
Evolutionary Biology*)

Peter Mieszkowski (*Economics*)

Donald Ostdiek (*Policy Studies*)

Ronald J. Parry (*Chemistry*)

David C. Queller (*Ecology and  
Evolutionary Biology*)

Patricia H. Reiff (*Astronomy  
and Physics*)

Ronald L. Sass (*Ecology and  
Evolutionary Biology,  
Chemistry, and Education*)

Dale S. Sawyer (*Earth Science*)

Evan Siemann (*Ecology and  
Evolutionary Biology*)

Joan E. Strassmann (*Ecology and  
Evolutionary Biology*)

James R. Thompson (*Statistics*)

Mason B. Tomson (*Civil and  
Environmental Engineering*)

Calvin H. Ward (*Civil and  
Environmental Engineering*)

Mark R. Wiesner (*Civil and  
Environmental Engineering*)

Gordon G. Wittenberg (*Architecture*)

# French Studies

## The School of Humanities

### Chair

Bernard Aresu

### Professors

Madeleine Alcover

Jean-Joseph Goux

Lynne Huffer

Deborah Nelson-Campbell

Daniel J. Sherman

### Associate Professors

Michel Achard

Deborah A. Harter

Philip R. Wood

### Senior Lecturer

Evelyne Datta

### Lecturers

Anna B. Caflisch

Brigitte Crull

*Degrees Offered: B.A., M.A., Ph.D.*

Courses in this department hone language skills in French while placing a diverse, generalized knowledge of French literature within a broad spectrum of cultural, historical, philosophical, and theoretical concerns. Students are also urged to take courses in fields closely related to French studies, including European and English history, literature, and philosophy. The department encourages students to spend time studying in a francophone country and to that end the French Studies department and Office of Student Advising will help students select an appropriate program. Courses in Italian language and culture are included within this department.

### Degree Requirements for B.A. in French Studies

For general university requirements, see Graduation Requirements (pages 16–18). Students majoring in French studies must complete at least 30 semester hours in upper-level courses (at the 300 or 400 level). A double major or an area major must complete 24 hours in upper-level courses.

### Required Courses

FREN 301 *Advanced French for  
Written and Oral Communications*

FREN 311 *Introduction to  
French Literature I*

or FREN 312 *Introduction to  
French Literature II*

FREN 371 *Old Regime and  
Revolutionary France*

or FREN 372 *The Making of  
Modern France, 1815–1995*

or FREN 360 *Society and the Sexes  
in Modern France*

or FREN 387 *Images of  
Contemporary France*

### Electives

7 additional courses (for single majors)—  
at least 3 courses at the 400 level and  
at least 1 course from Group III  
(culture, history, and civilization)

5 additional courses (for double majors)—  
at least 2 courses at the 400 level and  
at least 1 course from Group III  
(culture, history, and civilization)

In choosing their additional courses, majors must take at least 1 course each from the period before 1800 and the 1 after 1800, selected from the following:

**Period before 1800**

FREN 311 *Introduction to French Literature I*  
 FREN 351 *The Provinces of France*  
 FREN 371 *Old Regime and Revolutionary France*  
 FREN 410 *The Literary and Historical Image of the Medieval Woman*  
 FREN 415 *Courtly Love in Medieval France*  
 FREN 430 *French Classicism*  
 FREN 440 *French Enlightenment*  
 FREN 445 *Enlightenment and Counter-Enlightenment*

**Period after 1800**

FREN 312 *Introduction to French Literature II*  
 FREN 321 *Paris*  
 FREN 360 *Society and the Sexes in Modern France*  
 FREN 372 *The Making of Modern France, 1815–1995*  
 FREN 387 *Images of Contemporary France*  
 Plus other courses at the 400 level

As many as 2 French courses taught in English may count toward a major in French studies. Students who have taken 300- and 400-level French courses (except those taught in English) cannot enroll simultaneously or afterward in 200-level French courses for credit. At least half of the courses for the major must be taken at Rice University. The department normally requires that the basic courses for the major (FREN 301, 311, 312, 371, or 372) be taken at Rice.

Students with diplomas from French-speaking institutions must consult with the department before enrolling in courses, and all majors and prospective majors must have their programs of study approved by an undergraduate adviser. Students wishing to complete the honors program in French studies should also consult one of the advisers.

**Campus Activities.** To acquaint students with French language and culture, the department sponsors a weekly French Table that meets at lunch in a college. The Club Chouette also organizes outings to French movies, sponsors guest lectures, and, in cooperation with the department, helps to produce a play during the spring semester. Students who maintain at least a B average in 2 or more advanced French courses and have a GPA of at least 3, are invited to join the Theta chapter of the honorary Pi Delta Phi.

**Travel Abroad.** The department encourages majors to spend time living and studying in a francophone country. The Alliance Française of Houston offers a summer scholarship of \$3,000 each year to a qualified sophomore or junior for six weeks' study in France. The Clyde Ferguson Bull Traveling Fellowship, awarded each year to one graduating senior with a major or double major in French studies, permits the recipient to spend an entire year in France. Information about study abroad is available from the department faculty and in the Office of Academic Advising.

## **Degree Requirements for M.A. and Ph.D. in French Studies**

Admission to graduate study in French, granted each year to a limited number of qualified students, requires a distinguished undergraduate record in the study of French literature or a related field and a capacity for independent work. All candidates should have a near-native command of the French language. For general university requirements, see Graduate Degrees (pages 60–65).

**M.A. Program.** In most cases students take two years to complete work for the M.A. degree in French studies. While graduate students normally take 500-level courses, as many as 2 courses at the 400 level may count toward fulfillment of the following course requirements. M.A. candidates must:

- Complete with satisfactory standing 27 semester hours (in addition to B.A. course work) of upper-level courses, plus 6 hours of independent study in the preparation of three advanced research papers to be defended before their M.A. committee (The selection of the paper topics must receive preliminary approval from the examination committee.)
- Perform satisfactorily on a reading examination in one department-approved language other than French
- Perform satisfactorily on preliminary written and oral examinations conducted in French on works specified on the department reading list

**Ph.D. Program.** Candidates normally take 500-level courses, but students entering with a B.A. may count toward their Ph.D. degree as many as 3 courses at the 400 level that *also* have a 500-level listing; those entering with an M.A. may count 2 such courses. Graduate student enrollment in a course listed only at the 400 level, however, is subject to the instructor's approval. Candidates for the Ph.D. degree must accomplish the following, being sure to complete the additional language requirement and their preliminary exams one year before they submit a dissertation:

- In a program approved by the department, complete with high standing at least 54 semester hours of course work plus 36 thesis hours (for those already holding an M.A. degree, the requirement is 27 hours of course work plus 36 thesis hours)
- In addition, complete FREN 610 *Topics in Language Methodology*, a course required for all graduate language teaching assistants. Students entering with an M.A. who have completed the equivalent course are exempt from this requirement
- Satisfactorily complete 1 course at the 300 level or above in a language other than French or English, chosen in consultation with a graduate adviser for its relevance to their research interests. With the permission of the graduate committee, this requirement may also be met through satisfactory performance on a written language examination or by such other means as the graduate committee may direct
- Perform satisfactorily on preliminary written and oral examinations (the oral exam taken only after successful completion of the written exam) from a list of required, department-approved texts, including selected readings in French literature from all major periods and readings in crucial texts in philosophy and theory; history, cultural studies, and film; and postcolonial and gender studies
- Complete a dissertation, approved by the department, that represents an original contribution to the field of French studies
- Perform satisfactorily on a final oral examination on the dissertation

## Italian Language and Culture

Italian language courses are available under the auspices of the Department of French Studies, as are courses in Italian literature and culture. The department also sponsors a weekly Italian Table at Will Rice College. Also this year, the Donne Di Domani Scholarship of \$3,000 (based on merit) and need will be awarded to eligible undergraduates toward tuition and books.

**See FREN (pages 353–364) and ITAL (page 413) in the Courses of Instruction section.**

# German and Slavic Studies

## The School of Humanities

### Chair

Harvey Yunis

### Professors

Steven Crowell  
Margret Eifler  
Ewa M. Thompson  
Klaus Weissenberger  
John Zammito

### Professors Emeriti

James E. Copeland  
Joseph B. Wilson  
Michael Winkler

### Associate Professor

Peter Caldwell  
Maria-Regina Kecht  
Uwe Steiner

### Senior Lecturer

Richard Spuler

### Lecturers

Christa Gaug  
Florian Kreuzer  
Harry Roddy  
E. Douglas Mitchell

### *Degree Offered: B.A.*

The major in German studies offers maximum exposure to interdisciplinary studies in German. Courses situate German culture within the broad context of European history, covering not only the traditional fields of language and literature but also those of gender, film, and cultural theory. The degree work prepares students for careers in such fields as academia, communications, diplomacy, and international law and economics. Also offered are courses in German cultural studies (GMAN), which are taught in English.

In the B.A. degree program in Slavic studies, students acquire a proficiency in Russian and Eastern European language, culture, and literature. A three-year study plan is also available within this department in the Russian language. A variety of Russian literature courses are taught in English, including monograph courses on Tolstoy and Dostoevsky.

### Degree Requirements for B.A. in German Studies

For general university requirements, see Graduation Requirements (pages 16–18). Students majoring in German studies must complete at least 30 semester hours in upper-level courses (at the 300 or 400 level); a double major must complete 24 hours in upper-level courses. Majors may take 2 courses related to the subject of German studies outside the department in other fields of study such as art, music, linguistics, history, philosophy, and political science.

The department encourages all majors to meet with faculty and graduates at a weekly German Table for lunch in one of the colleges. Majors are also urged to spend time living and studying in Germany by applying for the Dr. and Mrs. Earl Douglas Mitchell Fellowship, a fund established for study abroad. Information on other programs of study in Germany is available from members of the German studies faculty and from the Office of Academic Advising.



**Honors.** Outstanding students are presented annually with the Max Freund Prize and the Goethe Institut Book Prize. The department also offers an honors program for majors excelling in their studies (see Honors Programs on page 33). Honors work consists of readings and research leading to a substantial honors essay under the supervision of a department faculty member; students should consider the work as a special interest study to enhance preparation and application for graduate school.

### **Degree Requirements for B.A. in Slavic Studies**

For general university requirements, see Graduation Requirements (pages 16–18). Single majors in Slavic studies must complete 24 semester hours (8 departmental courses) above the 300 level. Double majors must complete 18 hours (6 courses) above the 300 level. At least 1 of these courses must cover the entire Slavic area (e.g., SLAV/RUSS 320 Slavic Cultures, SLAV/RUSS 411 Contemporary Russia, or SLAV/RUSS 412 Contemporary Eastern and Central Europe).

Courses in Polish are offered subject to availability of an instructor. Students may take 2 Slavic studies-related courses from outside the department, subject to approval by the Slavic studies adviser.

Fellowships in varying amounts are available for Slavic studies from the Dr. and Mrs. Earl Douglas Mitchell Fellowship Fund.

**See GERM (pages 365–371), GMAN (pages 372–373), PLSH (page 494), RUSS (pages 521–523), and SLAV (pages 524–525) in the Courses Instruction section.**

# Hispanic and Classical Studies

## The School of Humanities

### Chair

Robert Lane Kauffmann

### Professors

James A. Castañeda  
Beatriz González-Stephan  
Harvey E. Yunis

### Associate Professors

Hilary S. Mackie  
J. Bernardo Pérez  
Maarten van Delden

### Assistant Professors

Scott McGill  
Rafael M. Mérida-Jiménez  
Rafael Salaberry

### Lecturers

Verónica Albin  
María Alvarez  
Suzana Bloem  
Patricia Brogdon-Gómez  
George Coulter  
Raquel Gaytán  
Gema Groskreutz  
Robin Martinez  
Jose Narbona  
Eileen Requena  
Marcela Salas  
Jane Verm  
Kristine Gilmartin Wallace  
Gloria Yampey-Jörg  
Elsa Zambosco-Thomas

*Degrees Offered:* B.A. and M.A. in Spanish, B.A. only in classics

Studies are available in classics, Greek, Latin, Portuguese, and Spanish. For information on the B.A. degree in classics, see Classics (pages 126–127). Undergraduate majors in Hispanic studies select one of four options: literature, linguistics, translation, or Latin American studies. Qualified students may undertake independent work. To provide students with the opportunity to live and study in a Spanish-speaking environment, the department offers an opportunity to spend the fall semester in Chile.

### Degree Requirements for B.A. in Hispanic Studies

Students majoring in Hispanic studies must complete at least 30 semester hours in upper-level courses (300 or 400 level); a double major must complete at least 24 semester hours in such courses. Requirements for the major differ according to the options selected. Majors should read the “Options for Spanish Majors” (available in department office) and consult with the undergraduate adviser regarding specific course prerequisites, requirements, and to recommend sequence. The department must approved all major programs of study. At least half of the courses for the major must be taken at Rice University.

**Fall Semester in Chile.** The department offers a fall semester in Chile in conjunction with the University of Chile in Santiago. Rice students in good standing are eligible for this program, which gives them access to a variety of courses at the University of Chile. Since its inception in 1989, the program has attracted students from universities

all over the U.S. Brochures and application materials are available in the department office. Internships are available. The resident director of the Chile program is Professor Emerita Joan Rea.

### **Degree Requirements for M.A. in Hispanic Studies**

For general university requirements, see Graduate Degrees (pages 60–65). For the M.A. degree, candidates must:

- Complete with high standing an approved program that normally includes 24 semester hours in advanced courses, plus 6 hours of thesis work
- Pass a reading examination in one foreign language (other than Spanish) that has been approved by the department
- Perform satisfactorily on a written comprehensive examination in Spanish, which tests students' competence in Hispanic literature and linguistics
- Take 1 semester of college Latin (or equivalent)
- Take SPAN 610 *Topics in Language Methodology*
- Complete an acceptable thesis
- Perform satisfactorily on a final oral examination on the thesis

**See PORT (page 503) and SPAN (pages 529–537) in the Courses of Instruction section.**

# History

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## The School of Humanities

### Chair

John H. Zammito

### Professors

John B. Boles  
 Ira D. Gruber  
 Thomas L. Haskell  
 Allen J. Matusow  
 Atieno Odhiambo  
 Patricia Seed  
 Daniel Sherman  
 Richard J. Smith  
 Gale Stokes  
 Martin J. Wiener  
 John H. Zammito

### Professors Emeriti

Katherine Fischer Drew  
 Harold Hyman  
 Albert Van Helden

### Associate Professors

Peter C. Caldwell  
 Edward L. Cox  
 Michael Maas  
 Carol E. Quillen  
 Paula A. Sanders  
 Joel W. Wolfe

### Assistant Professors

Alexander X. Byrd  
 Eva Haverkamp  
 Ussama Makdisi  
 Allison Sneider  
 Sarah Thal

Kerry R. Ward

### Visiting Professor

Alan M. Stahl

### Lecturer

James Bjork  
 Mark Schmeller

*Degrees Offered:* B.A., M.A., Ph.D.

The undergraduate program offers courses in the four main areas of ancient-medieval history, modern European history, U.S. history, and the histories of Asia, Latin America, and Africa. The department encourages its majors to acquaint themselves with other humanistic disciplines, such as literature, fine arts, and philosophy; the contributions of political science, sociology, economics, and anthropology are also vital to historical studies. The graduate program, which trains a limited number of carefully selected students, offers studies in a number of areas, with faculty interests ranging from ancient and medieval history to modern British, French, German, and Balkan history; from areas in American history that include Colonial America, the Old and New South, the Civil War, legal/constitutional and intellectual history to world military history; and from the history of science to East Asian, Latin American, and Middle Eastern history.

### Degree Requirements for B.A. in History

For general university requirements, see Graduation Requirements (pages 16–18). Students majoring in history must complete at least 30 semester hours (10 courses) in history, with 18 hours (6 courses) at the 300 or 400 level. Students may apply advanced placement credit to no more than 6 of these hours (2 courses). Majors should select 2 of the required upper-level courses from a departmental list of seminars devoted mainly to writing and discussion. Departmental distribution requirements are as follows (although students may not use advanced placement credit for these requirements):

**Ancient medieval history**—at least 1 course

**Modern European history**—at least 2 courses

**U.S. history**—at least 2 courses

**Asian, Latin American, and African history**—at least 2 courses

Some foreign language proficiency is desirable, and the department highly recommends that students who are contemplating graduate work in history study at least 1 foreign language in some depth.

**Transfer Credit and Advanced Placement Credit.** The Department of History grants transfer credit on a case-by-case basis to enrolled undergraduates (the registrar determines the hours to be credited). However, history majors must take **at least 18 semester hours** (6 courses) of the required 30 hours in history at Rice. No more than 4 courses may be satisfied through advanced placement and transfer credit. Advanced placement credit may not be used to satisfy departmental distribution requirements for a history major.

Rice students who wish to take classes for credit at another U.S. university should allow sufficient time to get advance confirmation from the department that the course is eligible: courses are eligible only if taken at a four-year institution. Rice students planning to study at a foreign university also must get course approval from the Office of International Education.

After completing an approved course from either a domestic or a foreign university, students should submit a request for transfer credit, including evidence of the scope and work requirements of the course to be transferred (e.g., a syllabus, reading lists, and copies of exams and papers), to the department's director of undergraduate studies.

**Honors Program.** Qualified undergraduates may enroll for 6 semester hours of directed honors research and writing, completing an honors thesis in their senior year (these 6 hours are **in addition to** the 30 hours required for the major). Students must complete both semesters of HIST 403/404 to receive credit; the grade for the final project applies to the full 6 hours. Interested students who have a grade point average of at least 3.50 in their history courses should submit a substantial historical essay, an honors thesis proposal, and recommendations from the instructor to whom the paper was submitted and from their proposed adviser. Financial assistance is available for honors students to conduct research on their honors theses during the summer between their junior and senior years. After their admission to the program, a periodic workshop allows honors students to share problems and ideas. Once the adviser and another reader have evaluated the completed thesis, the director of the honors program determines whether to award honors. Students who miss the final thesis deadline (which is well before the end of their senior year) will receive a grade and credit for completed work, but no honors.

## **Degree Requirements for M.A. and Ph.D. in History**

The Rice University graduate program in history is primarily a Ph.D. program. Students who have a B.A. in history (or its equivalent) from an acceptable institution are eligible to apply to the Ph.D. and M.A. programs. Although many successful candidates to the Ph.D. program have an M.A. or other advanced degree, advanced study is not a requirement for admission. Graduate degrees are offered in U.S., European, intellectual, and other areas of history. Further information is available on request from the department. For general university requirements, see Graduate Degrees (pages 60-65).

The department awards graduate tuition waivers and fellowship stipends, within the limits of available funds, to qualified Ph.D. candidates with demonstrated ability. University funding is not available for masters program study only. All graduate

students in the history department are expected to participate in the professional activities of the department as part of their training. These include, but are not limited to, assisting with the *Journal of Southern History* or the *Papers of Jefferson Davis* and serving as research assistants or teaching assistants for department members. Insofar as possible, these assignments are kept consistent with the interests of the students.

**M.A. Program.** The department gives priority to applicants for the Ph.D. Completion of the M.A. degree usually takes two years; no more than three years may elapse between graduate admission and the completion of the degree unless the department Graduate Committee approves an extension. M.A. degrees are awarded in two ways: (1) completion of one year of course work (24 credit hours) and a thesis written and defended in an oral examination during the second year; and (2) completion of two years of course work (48 credit hours), normally including at least 8 seminar research papers.

**Ph.D. Program.** Doctoral candidates must prepare themselves in three fields of history: two in their major area of concentration, whether European, U.S., or other history, and a third in an area outside of that concentration (e.g., if the major area is European history, the third field must be in U.S. or other non-European history, and if the major area is U.S. history, the third field must be in European or other non-U.S. history, and so on). Students who wish to pursue a third field in an area outside the department should petition the Graduate Committee by the end of their second semester.

The requirements for completing the degree will be administered as flexibly as possible within the bounds of the general university regulations. These requirements state that the Ph.D. degrees “will be awarded after successful completion of at least 90 semester hours of advanced study and an original investigation reported in an approved thesis.” Passing the qualifying exam and receiving approval of a dissertation prospectus allows the student to apply for formal admission to candidacy for the Ph.D. degree.

For the Ph.D., candidates must:

- Prepare themselves thoroughly in three examination fields.
- Take 8 graduate seminars, including Introduction to Doctoral Study in History.
- Pass reading examinations in the principal language of research (unless it is English) and one other language (not English).
- Perform satisfactorily on written and oral examinations. For students entering with a B.A., those examinations will normally be taken before the beginning of the fifth semester and no later than the beginning of the sixth semester. Students entering with an M.A. may take their examinations earlier, with departmental approval.
- Complete a dissertation presenting the results of original research.
- Defend the thesis in a public oral examination.

**See HIST (pages 386–409) in the Courses of Instruction section.**

# Kinesiology

## The School of Humanities

### Chair

Bruce Etnyre

*Associate Professor*

### Professors

Nicholas K. Iammarino

Dale W. Spence

### Professors Emeriti

Eva J. Lee

Hally B.W. Poindexter

### Associate Professor

James G. Disch

### Assistant Professor

Brian T. Gibson

### Adjunct Professors

William J. Bryan

Armin D. Weinberg

### Lecturer

Marlene A. Dixon

John F. Eliot

### Part-time Lecturers

Roberta Anding

Cassius B. Bordelon, Jr.

Allen W. Eggert

Kristy Vandenberg

*Degree Offered: B.A.*

A minimum of 120 semester hours is required for a bachelor of arts degree in kinesiology. Due to the interdisciplinary and diverse nature of the field of kinesiology, each student is required to specify an academic track concentration within the major. The department was one of the first academic programs of its kind in the nation to institute an academic track structure that allows students to concentrate their efforts on a more specific subdiscipline. Academic tracks include sports medicine, health science, and sport management. Detailed requirements of each track can be obtained on the departmental web page at <http://www.ruf.rice.edu/~kines/>.

## Degree Requirements for the B.A. Degree in Kinesiology

### Sports Medicine

*Directors: Dr. Dale Spence and Dr. Brian Gibson*

Students who choose the sports medicine track of the kinesiology department typically continue their education at the graduate level or plan on attending medical school or other medically related professional schools such as physical therapy. Graduates may also be directly employed in medical and corporate settings, which include both preventative and rehabilitative programs. Graduates who choose not to seek post-baccalaureate education are generally encouraged to obtain certification for exercise testing, physical fitness evaluation, or exercise prescription through the American College of Sports Medicine at <http://www.acsm.org/>, or they may obtain athletic trainer certification through the National Athletic Trainers' Association at <http://www.cewl.com/>.

A specific intention of the sports medicine curriculum is to provide a strong natural science foundation and to interface this foundation with application to the human body. Prerequisite courses in chemistry and physics, elective courses in biology and biochemistry, as well as an array of required and elective courses offered within the department provide this foundation. The sports medicine track is the only academic specialization

on campus that provides exposure to human anatomy and human physiology. In addition, students receive a solid foundation in nutrition, biomechanics, sports psychology, motor learning, measurement and statistics, exercise physiology, and sports medicine and training. Practical experience is afforded through several academic labs. Other elective courses include writing for professional communication, epidemiology, case studies in human performance, motor control, advanced exercise physiology and preventative medicine, research methods, muscle physiology and plasticity, and seminar in sports medicine. During advising sessions, students are encouraged to select from these electives according to their respective career goals. Students in the sports medicine track are expected to develop a strong scientific knowledge base as well as adept critical reading, writing, and oral communication skills.

Qualified students of the sports medicine track will be encouraged to participate in an independent study. This independent study allows integral involvement in basic or applied research directed by a faculty adviser. The application (proposal) process for independent studies is outlined in the web page listed below. Qualified students also are encouraged to apply for any one of a variety of highly competitive internships. The internships generally provide students an opportunity to experience the application of preventative and rehabilitative sports medicine concepts and practice at a health care or corporate setting.

For more information, go to the sports medicine website at [http://www.ruf.rice.edu/~kines/bgibson\\_index.html](http://www.ruf.rice.edu/~kines/bgibson_index.html)).

## **Sport Management**

*Director: Dr. John Eliot*

Sport Management is an interdisciplinary field of study of fairly modern development. It first appeared in the curricula of American universities under a variety of designations in the early to mid-1980's. Rice University became a pioneer institution in integrating this field into the traditional academic area known as kinesiology by making sport management one of the original tracks when the department was reorganized into its present configuration.

As a distinct body of knowledge and field of study, sport management draws from a wide range of academic disciplines: economics, sociology, political science, psychology, law, communication, and managerial studies. Each discipline can be applied to the business enterprise of amateur and professional sport, as well as the management of highly effective teams in sport, corporate America, or other management related professions. While public and private sector sport operation is the topic of a large segment of the curriculum, the thoroughly interdisciplinary emphasis aims at educating students in the skills and theory necessary to assume responsible leadership roles in and out of sport. Career preparation for leadership and entrepreneurial positions is the ultimate goal of sport management at Rice.

Students wishing to complete this major with the additional intent of gaining employment in the sport industry should pay particular attention to practical experience. Networking and out-of-class development often plays the most significant role in obtaining jobs and promotions along high profile career paths such as those in collegiate or professional sports organizations. Students interested in handling duties in public relations, media, event direction or promotion, office management, management of coaching and scouting, human resources, business development, sports information, or advertising will therefore need to demonstrate a commitment to securing and completing internships. Membership in national sport societies, specifically the North American Society for Sport Management (NASSM)—the leading academic association in this field and governing body from which Rice is in the process of obtaining national accreditation—is strongly recommended.



Highly qualified students will also be encouraged to seek an honors major, a double major, and/or consider pursuit of an advanced degree in business, law, sport management, or organizational psychology. Students will acquire a solid foundation in public speech, professional writing, and leadership and thus will be competitive for opportunities at the country's best law and business schools, as well as with journalism programs and premier consulting corporations.

### **Health Sciences**

*Director: Dr. Nicholas K. Iammarino*

The purpose and goal of the health science track is to provide students with a fundamental and broad background in health promotion and disease prevention that will enable them to understand and appreciate the complexities of maintaining an optimal level of personal health while also considering the role that health promotion plays in society and the mechanisms that affect community health. The health science track is viewed as an excellent option for undergraduate students who are preparing to enter graduate school in health education, health promotion, or public health as well as other health related graduate or professional schools such as in medicine, dentistry, etc.

The successful completion of the health science track requires students to complete a total of 42 semester hours in addition to other university degree requirements. The track currently consists of 6 required lecture courses (one of which is a KINE core course that is consistent across all four tracks) for a total of 18 required hours. The 5 remaining courses cover the structure and function of the human body (Anatomy and Physiology), an introductory course designed to acquaint students with the fundamental concepts of health and models of health promotion (Concepts of Health Science), methods of understanding the disease process (Epidemiology), and a course that provides an introduction to statistics and measurement (Measurement and Statistics).

The remaining 24 semester hours are drawn from elective courses that are both within the KINE department and, at present, more than 15 courses from other academic departments. In keeping with the university's interest in an interdisciplinary approach to undergraduate education, this allows students to choose health-related courses within the natural sciences, social sciences, and humanities divisions.

**See HEAL (pages 383–385), and KINE (pages 415–418), in Courses of Instruction.**

# Linguistics

## The School of Humanities

### Chair

Philip W. Davis

### Professors

Masayoshi Shibatani

Stephen A. Tyler

### Professors Emeriti

James E. Copeland

Sydney M. Lamb

### Associate Professors

Michel Achard

Maria-Regina Kecht

Suzanne E. Kemmer

### Assistant Professors

Michael Barlow

Nancy Niedzielski

Nanxiu Qian

Rafael Salaberry

### Adjunct Associate Professor

Spike Gildea

### Lecturers

Robert Englebretson

E. Douglas Mitchell

*Degrees Offered:* B.A., M.A., Ph.D.

**Undergraduate Programs.** The department offers both a major program in linguistics, and a Certificate in Teaching English as a Second Language, which may be earned with or without a linguistics major.

**Linguistics Major.** Because human language is a multifaceted object of study, linguistics is, by its nature, an interdisciplinary field. The undergraduate major in linguistics provides both an in-depth grounding in the field as well as cross-disciplinary breadth. Students beginning a linguistics major should take LING 200, which is a prerequisite for many upper-level courses in the department. All majors are required to take at least 8 courses (24 semester hours) in linguistics at the 300 level or above, including 4 core courses: LING 300, 301, 1 of LING 402 or 416, and 1 of LING 305 or 315. No more than 1 independent study course may be counted toward the major requirement. In addition, competency in 1 language other than English is required. This requirement may be satisfied by 2 courses in a foreign language at the 200 level or above or equivalent; or at the 100 level or above for non-European languages.

Students may elect either a general linguistics major or one of four areas of concentration. Majors who plan to pursue graduate training in linguistics are recommended to choose one of the areas of concentration. These students also are urged to apply for admission to the honors program in their junior year.

The general linguistics major requires, in addition to the 4 core courses and the language requirement, at least 4 upper-level linguistics electives. The requirements for the various concentrations include additional courses, as follows.

**Language Concentration.** In addition to the basic language competency required of all majors, the language concentration requires an advanced level competency in a different language. This can be satisfied by 2 language courses taught in a language other than English at the 300 level or above, or equivalent. In addition to the core courses, 4 advanced linguistics electives are required, which should be chosen in consultation with the linguistics adviser. Courses in the structure or history of the languages studied are especially appropriate.

**Cognitive Science Concentration.** In addition to the core courses, this concentration requires 3 courses focused on the cognitive aspects of human language, selected from LING 306, 315, 317, 411, and 412; 2 courses from cognitively related disciplines (psychology, computer science, anthropology, philosophy) as approved by the major adviser; and 2 other advanced linguistics electives.

**Language, Culture, and Society Concentration.** For an in-depth grounding in a particular language and culture, this concentration requires 2 language courses at the 300 level or above. The language may be the same as that used to satisfy the basic level language competency. Besides the 4 core courses, 2 additional courses from the following must be selected: LING 205, 313, or 406. Finally, 2 courses in sociocultural studies outside the department are required, and must be approved by the major adviser. Examples of appropriate courses are ANTH 353, PSYC 202, RELI 393, or HIST 250.

**Second Language Acquisition Concentration.** Two language courses at the 300 level or above are required; the language may be the same as that used to satisfy the basic-level language competency. In addition to the linguistics core courses, 4 additional courses are required as follows: LING 205, 340 and LING 417, LING 394 or a foreign language equivalent (e.g., Structure of Spanish, Structure of German, etc.) as approved by the major adviser, and one of the following: LING 205, 309, 313, or 490.

In addition to the departmental requirements for the major, students must satisfy the distribution requirements and complete no fewer than 60 semester hours outside the departmental requirements for a total of at least 120 semester hours. See Graduation Requirements (pages 16–18).

**Honors Program.** The departmental honors program provides selected undergraduate majors with the opportunity to conduct supervised research within their area of specialization in the major. Majors planning to pursue graduate training in linguistics or a related field are strongly encouraged to apply, as well as others who wish to add the experience of an intensive, individualized research project to their undergraduate education.

Application to the honors program should be made in person to the undergraduate adviser in the second semester of a student's junior year. In support of the application, the student should prepare a brief description of the proposed project signed by the faculty member who is to supervise the work. Acceptance into the program is by agreement of the linguistics faculty. On acceptance, the student will enroll in LING 482 Honors Project, with the supervising faculty member named as instructor. The honors program framework is designed to facilitate as far as possible the development of a mentoring relationship between student and faculty member. Students are thus expected to consult with the project supervisor periodically regarding their progress; the supervisor will provide research guidance and general support. With the appropriate completion of major requirements and the honors project or thesis, the student will graduate with departmental honors as follows: "With Distinction," "With High Distinction," or "With Highest Distinction," as determined by the linguistics faculty.

**Certificate in English Language Teaching.** This program is designed for students who plan on teaching English to nonnative speakers in the U.S. or abroad. The Certificate in Teaching English as a Second Language provides undergraduate-level training in applied linguistics and English language, as well as some practical preparation for English language teaching. It can be easily combined with a major in linguistics, education, or English. To enroll in the program, see the director of the ESL Certificate Program or the linguistics undergraduate adviser.

The program consists of 4 courses and a practical component. The courses are LING 200, 340, 394, and 1 of the following: LING 309, 313, or 205. The practical component consists of a total of 20 contact hours of language teaching/tutoring experience. This requirement may be filled by tutoring in the Rice Student Volunteer Program or by teaching in a high school or community ESL program. Students will be expected to write a short report on their teaching experience. Successful completion of the certificate program must be certified by the director of the ESL Certificate Program and will be indicated on the Rice transcript upon completion of degree requirements.

**Doctoral Program.** The doctoral linguistics program at Rice emphasizes the study of language use and functional/cognitive approaches to linguistic theory. The four areas of particular research strength in the department are field studies of particular languages (e.g., languages of North and South America; Austronesia; Africa; Europe; and East Asia), typology, and language and mind (cognitive linguistics, neurolinguistics, schema-based theories, lexical semantics), and language change (diachronic typology, grammaticalization theory, semantic change, language classification, and Indo-European linguistics). Additional research areas represented are second language acquisition, applied linguistics, discourse analysis, and corpus linguistics.

The program admits students planning to study for the Ph.D. degree on a full-time basis. Undergraduate preparation should ideally include language study and course work in linguistics or disciplines related to linguistics, such as anthropology, applied linguistics, psychology, or computational modeling. Interdisciplinary interests are encouraged. A master's degree may be earned during progress to the Ph.D. degree. Admission to the program is competitive. Students admitted to the program are generally offered financial support in the form of tuition scholarships and/or stipends for living expenses.

During the first year of residence, each entering student works closely with the graduate adviser to choose a plan of study congruent with the demands of the program and the student's interests. Emphasis throughout the program is on a close working relationship with faculty. Students should select areas of specialization that fit well with faculty research interests and activities. (See the departmental homepage at <http://www.ruf.rice.edu/~ling> for faculty research specializations.)

Students with master's degrees in linguistics will normally progress through the degree program in three to four years; those without in four to five. With no prior linguistics background, course work in the first two years will generally include 2 courses in the area of phonetics/phonology, 2 in the area of syntactic/semantic analysis, 1 two-course sequence in field methods, 1 problem-solving course in linguistic analysis, and at least 2 courses in other subfields of linguistics. Prior preparation in linguistics will be assessed with regard to its equivalence to particular Rice courses. Students are also normally expected to serve as teaching assistants for 1 course per year during the time they are receiving departmental support; such service is included in the normal course load. Graduate students are required to register for at least 12 hours credit per semester prior to advancing to candidacy.

At the end of the first year of study, students undergo an oral qualifying examination to assess their progress in the doctoral program. Continuation to the second year requires successful performance on this examination and in first-year course work. In each of the second and third years, in addition to their course work, students prepare an in-depth research paper on a topic chosen in consultation with a committee of faculty. These 2 papers will represent different areas of the field, and at least 1 will be on the structure of a non-Indo-European language. Students should work toward establishing a close working relationship with various faculty such that multiple faculty members are closely familiar with the student's work. After the second research paper is accepted, a dissertation adviser is selected and a doctoral committee formed, by mutual agreement of the student and the relevant faculty members.

Before advancing to candidacy, students must demonstrate reading competency in 2 research languages other than English. It is also expected that students will submit their work for presentation at one or more professional meetings and publish such work in conference proceedings and/or journals. Funds may be available to defray the cost of travel to such meetings.

During the fourth year, students present to their doctoral committee a third research paper consisting of a substantial dissertation proposal and a comprehensive bibliography. This proposal, ideally building on their previous research, may take the form of a grant proposal to an external funding agency, particularly where fieldwork abroad is proposed. The proposal is also presented orally in a departmental forum. On acceptance of the proposal, the student formally advances to Ph.D. candidacy.

The doctoral research project may require fieldwork in residence or abroad prior to writing the dissertation. The student is expected to consult regularly with faculty members during the writing process. After a complete draft of the dissertation is submitted, the student defends the dissertation publicly. When the final version of the dissertation is accepted by the doctoral committee and filed with the university, and all other requirements are certified as filled, the degree is then granted.

**See LING (pages 420–427) and SANS (page 524) in the Courses of Instruction section.**

# Lifetime Physical Activity Program

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## Student Affairs

### Director

Dr. Daniel N. McMasters

### Lecturers

Felicia Cavallini

Christine Lidvall

Rebecca Valls

Scott Wray

The mission of the Lifetime Physical Activity Program (LPAP) is to provide a multifaceted learning experience via a program of physical activity to foster physical, social, and emotional wellness. The ultimate goal of the LPAP is to provide each student with:

- Knowledge of health-related concepts of physical activity
- Cognitive and behavioral skills
- An understanding of physical activity as a mode of improved quality of life throughout the life-span
- A sense of emotional well-being
- Satisfying social interaction
- Knowledge of rules and strategies
- An opportunity to learn an activity which is not necessarily mainstream in U.S. culture
- Top-notch professional instruction specific to the course material
- An introduction to intramural sports, sport clubs, dance theatre, and recreational programs
- Improved quality of life at Rice University

Lifetime physical activity classes are strongly recommended for all first-year students, including transfers who have not had an equivalent course elsewhere. Satisfactory completion of LPAP 101 and 102 is a requirement of the baccalaureate degree. Student should not repeat an activity in LPAP 102 that was taken in LPAP 101.

The LPAP offers approximately 36 sections each semester. Within scheduling constraints, a student may select a section which offers activities that satisfy his/her interests. The LPAP offers a variety of activities. Many sections offer 2 activities per semester (e.g., volleyball/soccer), allowing a student to experience 3 or 4 activities during one year. Some of the current activities offered include racquet sports (tennis, racquetball, badminton, squash), fitness activities (aerobics, personal fitness, weight training, walking/jogging, cycling), aquatics, dance (Latin ballroom, ballroom, modern, ballet, country western), martial arts, team sports (flag football, basketball, volleyball, soccer, softball), and other activities such as fencing, self defense for women, golf, disc golf, yoga, and wellness.

**See LPAP (pages 427–428) in the Courses of Instruction section.**

# Management and Accounting

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## The Jesse H. Jones Graduate School of Management

### Dean

Gilbert R. Whitaker, Jr.

### Professors

Richard P. Bagozzi  
 Bala G. Dharan  
 Robert Dipboye  
 Linda P. Driskill  
 Jennifer M. George  
 G. Anthony Gorry  
 George Kanatas  
 H. Albert Napier  
 Ronald N. Taylor  
 Wilfred C. Uecker  
 Robert A. Westbrook  
 Edward E. Williams  
 Duane Windsor  
 Stephen A. Zeff

### Research Professor

Marc J. Epstein

### Associate Professors

Shannon Anderson  
 Richard R. Batsell  
 Steven C. Currall  
 Jeff Fleming  
 David L. Ikenberry  
 Barbara Ostdiek  
 Miguel A. Quiñones  
 Douglas A. Schuler

### Assistant Professors

Michele J. Daley  
 Utpal Dholakia  
 Gustavo Grullon  
 Michelle R. Hebl  
 Michael B. Heeley  
 Neelam Jain  
 Quintus R. Jett  
 Lisa R. Klein  
 Trichy V. Krishnan  
 Sharon F. Matusik  
 Karen Elisabeth Schnietz  
 Sanjay Sood  
 Fu-Kuo Wang  
 James P. Weston

### Instructors

Deborah J. Barrett  
 Charles McCabe  
**Adjunct Professors**  
 Roberto Abib  
 Anne Marie Ainsworth  
 Paul S. Allen  
 Michael Alsup  
 Khleber Attwell  
 Stephen J. Banks  
 John Boatwright  
 Marc Boom  
 James W. Crownover  
 Christopher Durovich  
 Jerry E. Finger  
 Robert N. Flatt  
 Joseph R. Gagliardi  
 Arthur Garson, Jr.  
 Jack M. Gill  
 John K. Hannan  
 Terry Hemeyer  
 Vincent Kaminski  
 Robert M. Lesnick  
 Dennis Loughridge  
 Shahid Malik  
 Stuart P. Morstead  
 Timothy Nash  
 Robert B. Parke, Jr.  
 David Ross, III  
 Armand Shapiro  
 Joan E. Shook  
 David Titus  
 Richard H. Ward, III

### Lecturers

W. Clifford Atherton  
 David M. Austgen  
 John A. Baker  
 Lovett Baker  
 Sylvia Bennett  
 Donald D. Clayton  
 E. Scott Crist  
 John D. Faucher  
 Susan Faust  
 Lawrence Hampton  
 Bradley Jackson  
 Patricia R. Lawrence  
 Pilar Llusa  
 James P. Mandel  
 Robert McAshan  
 Dennis E. Murphree  
 Elizabeth A. Peters  
 Dale Qualls  
 Leslie Rohrer  
 Steven Russo  
 James R. Sowers  
 Ramamirtham Sukumar  
 Ann Thomas  
 V. Richard Viebig, Jr.  
 Stuart Wagner

The Jesse H. Jones Graduate School of Management was established in 1974 through a gift from Houston Endowment Inc. The school provides its highly select graduate students with unique opportunities for professional training in management. The master of business administration (M.B.A.) program includes elective offerings in accounting, entrepreneurship, finance, international business, information technology, marketing, operations management, organizational behavior and human resource management, healthcare management, and strategic management and planning.

The M.B.A. is also offered in a format designed for executives who do not wish to interrupt their careers while they pursue their degrees. Meeting every other weekend, the M.B.A. for Executives Program features the same content and faculty as the traditional two-year M.B.A. program, and is completed in 21 months. This general management program offers no tracks for specialization; however, much of the content of elective courses in the two-year M.B.A. has been incorporated into the course modules for the executive format. The M.B.A. for Executives Program offers 4 electives at the end of the 21-month period.

A joint M.B.A./master of engineering degree offered by the Jones Graduate School and the George R. Brown School of Engineering, in any of the departments of engineering or in statistics, prepares students to become managers in organizations requiring a high level of technical expertise and management skills.

A joint M.B.A./M.D. offered by the Jones Graduate School and Baylor College of Medicine prepares students to become both physicians and managers in institutions involved in the delivery of high-quality health care, as well as biotechnology-focused industries, health insurance/managed healthcare firms, and pharmaceutical and medical supply and equipment companies.

Although no undergraduate major is offered, undergraduate accounting courses are available.

### **Admission Requirements for Jones Graduate School**

For general information, see Admission to Graduate Study (pages 65–66). Applicants to the M.B.A. program must submit scores on the Graduate Management Admission Test (GMAT) rather than the Graduate Record Examination (GRE), and, unless they received an undergraduate degree from a U.S. college or university, foreign nationals whose native language is not English must submit recent scores on the Test of English as a Foreign Language (TOEFL). Admission to the Jones Graduate School is open to students regardless of their undergraduate major, but it is highly selective and limited to those who have performed with distinction in their previous academic work and on the GMAT.

**M.B.A. Program.** Although the M.B.A. program has not established specific prerequisite courses for admission, students may find it beneficial to have a background that includes undergraduate course work in principles of accounting, principles of microeconomics, and mathematics. Because spreadsheet and word-processing software are used extensively in course work, students should have a thorough understanding of these types of software packages before enrolling.

**M.B.A. for Executives.** In addition to meeting the standards for admission to the M.B.A. program, students admitted to the executive program typically have at least 10 years of relevant work experience.

**Joint M.B.A./Master of Engineering Program.** To enter the joint degree program, applicants must be accepted by both the Jones Graduate School and the engineering department in which they wish to enroll. The program requires the Jones Graduate School application and the GRE, rather than the GMAT. Some engineering departments require advanced tests as well.



**Joint M.B.A./M.D. Program.** To enter this joint degree program, applicants must first be accepted by Baylor College of Medicine and then apply separately to the Jones Graduate School. The MCAT is accepted rather than the GMAT. Two years of medical school are required before starting M.B.A. classes.

### Degree Requirements for M.B.A.

For the M.B.A degree, students must:

- Spend at least 2 academic years in residence at Rice
- Complete at least 60 semester hours in course work
- Register for no fewer than 15 hours and no more than 18 hours each semester (any other registration requires special permission)

All registration and drop/add forms require the signature of the M.B.A. program director or a designee. The school, which must approve all courses, specifies the sequence of required first-year courses at registration for each entering class.

**Waivers and Transfers of Credit.** At its sole discretion, the school may allow students to transfer credits (up to 6 hours). This does not necessarily reduce the residence requirement, but it does make additional elective courses available. Students otherwise must follow the prescribed curriculum of study and are not allowed to waive any core requirements.

**First-Year Courses.** Students must complete at least 32 approved credit hours. The modular core curriculum includes financial accounting, data analysis, business ethics, information technology, marketing, finance, managerial economics, organization behavior, competitive strategy, managerial and leadership skills, managerial communication, economic environment of business, globalization of business, cost management, operations management, business-government relations, organization theory and change management, and 2 electives. During the second semester, teams of students participate in an action learning project in which they work at a company to solve a specific problem. This project allows them to integrate the business disciplines they studied and to turn knowledge into action. The core courses serve as prerequisites for required and elective courses taken in the second year.

**Second-Year Courses.** Students must complete at least 28 credit hours that include required courses in entrepreneurship and strategy formulation and implementation, and 25 credit hours of electives.

**Areas of Interest.** Although M.B.A. students are not required to select a formal elective concentration for degree purposes, they may wish to choose 1 or more areas of interest from among the following: accounting, entrepreneurship, finance, general management, international business, information technology, marketing, operations management, organizational behavior and human resource management, healthcare management, and strategic management and planning. The M.B.A. program director and individual faculty members offer students advice on course selection. Students may also take upper-level or graduate courses from other departments at Rice. Students may not credit basic foreign language courses toward the M.B.A. degree, but advanced language courses may qualify with approval from the M.B.A. program director.

### Degree Requirements for M.B.A. for Executives

This degree requires completion of 11 mini-semesters totaling 56 credits, including Extended Learning Labs. The program is a lock-step progression in which all students take required courses in an identical sequence, except for the 4 elective courses at the end of the 21-month period.

## Degree Requirements for Joint M.B.A./Master of Engineering

Students may earn this nonthesis engineering degree in the fields of chemical engineering, civil engineering, computational and applied mathematics, computer science, electrical and computer engineering, environmental science and engineering, mechanical engineering and materials science, and statistics. Ordinarily, the engineering degree takes one academic year to complete, whereas the M.B.A. requires two. Joint-degree candidates, however, can fulfill requirements for both degrees in two academic years.

For the joint M.B.A./master of engineering degree, students must complete:

- At least two academic years in residence at Rice
- 63 semester hours in approved course work:
  - 24 hours in an engineering discipline
  - 39 hours in business administration

Students plan their course schedules in consultation with the engineering department in which they are enrolled and with the M.B.A. program director.

## Degree Requirements for the Joint M.B.A./M.D. Program

Students may earn both M.B.A. and M.D. degrees in five years. They divide their time as follows:

- Years one and two—medical training at Baylor College of Medicine
- Year three—core M.B.A. courses at Rice
- Year four—M.B.A. courses at Rice, including 3 semester hours of required courses and 12 semester hours of healthcare electives during the fall semester, and medical training at Baylor College of Medicine during the spring semester
- Year five—medical training at Baylor College of Medicine

Students use the summer between the third and fourth years to perform healthcare research programs or externships. Students receive their M.B.A. degree from Rice after they have completed 47 hours of approved management course work; they receive their M.D. degree after they have completed the requirements specified by Baylor College of Medicine.

## Academic and Professional Standards

Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the M.B.A. degree program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

**Academic Standards.** A minimum cumulative grade point average of 3.00 (B) is required for graduation. All courses taken for the M.B.A. degree (including approved courses taken at the university but outside the Jones Graduate School) are counted in the cumulative grade point average calculation.

Students with a cumulative grade point average lower than 3.00 at the end of any semester will be notified of dismissal and may no longer register for courses. A student who has been notified of dismissal may appeal to the Academic Standards Committee of the Jones Graduate School. The committee will decide, based on the circumstances of the appeal, whether the student (1) may resume studies on probation, (2) is to be suspended for one semester or an academic year, or (3) is to be dismissed from the M.B.A. program.

Students proposing to return after a period of academic suspension must apply to the Academic Standards Committee and receive permission to be readmitted.

Only grades of C and higher are counted for credit toward graduation. If students

receive a grade lower than C in a course required for graduation, they must repeat the course. If students receive a grade lower than C in an elective course, they need not repeat the specific course, but they must make up the hours.

Students may retake a failed course only once and then only if their cumulative grade point average is 3.00 or higher, or they have received the permission of the Academic Standards Committee to do so. Students who fail a course twice will be notified of dismissal. (Students may not take any course for which the failed course is a prerequisite until they pass the prerequisite course.)

Students on academic probation cannot be candidates for student offices, cannot graduate or drop courses, and must complete all future courses with a grade of C or above. Students are removed from probation only upon achieving a cumulative grade point average of at least 3.00 at the end of the following semester of work.

Students who have completed the required number of hours for the M.B.A. degree, the joint M.B.A./master of engineering degrees, or the joint M.B.A./M.D. degree, but who have a cumulative grade point average lower than 3.00, are dismissed without graduation. If, in an appeal to the Academic Standards Committee, a student can substantiate a claim of extenuating circumstances, i.e., those beyond the student's control, the student will be permitted to take additional course work at the university within the next year to raise his or her grade point average to 3.00.

**Professional Standards.** M.B.A. students are held to the high standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for **failure to meet professional standards**, as defined in the University Code of Conduct. The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing of specific charges. (This probationary notice, however, is not required as a precondition for filing specific charges.)

## Financial Aid

Financial assistance by the Jones Graduate School is awarded only for a given semester or year. Continuation of assistance depends upon satisfactory academic performance, professional behavior, and availability of funds. Academic or disciplinary probation, suspension, or more than three grades below B- result in the removal of all forms of school financial assistance, whether scholarship, loan, or employment. Scholarships are awarded for a combination of need and academic merit.

## Resolution of Disagreements

By university policy, a final grade for a course submitted to the registrar's office may be changed only if the instructor made a clerical error in calculating that grade.

In the event of a significant disagreement not involving grades between a student and an instructor, the following grievance process is used. First, the student should try to resolve the disagreement with the instructor. After that, either party may bring the matter to the M.B.A. program director, who will attempt mediation. Either party may then appeal to the dean through the Academic Standards Committee.

The grievance process is conducted according to a formal written policy approved by the school faculty and should be reserved for serious complaints of individual mistreatment; frivolous complaints will be dismissed.

**See ACCO (page 235) and MGMT (pages 448–465) in the Courses of Instruction section.**

# Managerial Studies

## The School of Social Sciences

*Degree Offered:* B.A.

The major in managerial studies is an interdepartmental, nonprofessional program designed to provide undergraduates with an understanding of the environment in which businesses and other organizations exist today, and of some of the tools employed by management in the commitment of its financial and human resources. All students taking the managerial studies major must also complete at least one of the established departmental or interdepartmental majors, other than an area major. Managerial studies is not the equivalent of an undergraduate business major at other universities.

### Degree Requirements for B.A. in Managerial Studies

For general university requirements, see Graduation Requirements (pages 16–18). For the B.A. degree, students majoring in managerial studies must complete the following 11 core courses in addition to satisfying all the requirements for their second departmental or interdepartmental major:

ACCO 305 <i>Introduction to Accounting</i>	<b><i>1 course from the following:</i></b>
CAAM 376 <i>Introduction to Management Science</i>	ECON 436 <i>Regulation</i>
ECON 211 <i>Principles of Economics I</i> (microeconomics)	ECON 438 <i>Economics of the Law I</i>
ECON 212 <i>Principles of Economics II</i> (macroeconomics)	POLI 335 <i>Political Environment of Business</i>
ECON 448 <i>Corporation Finance</i>	POLI 338 <i>Policy Analysis</i>
MANA 404 <i>Management Communications in a Consulting Simulation</i>	<b><i>1 course from the following:</i></b>
PSYC 101 <i>Introduction to Psychology</i>	ACCO 406 <i>Management Accounting</i>
PSYC 231 <i>Industrial and Organizational Psychology</i>	ACCO 409 <i>Financial Reporting and Analysis</i>
STAT 280 <i>Elementary Applied Statistics</i>	ECON 370 <i>Microeconomic Theory</i>
or PSYC 339 <i>Statistical Methods—Psychology</i>	or ECON 372 <i>Mathematical Microeconomics</i>
	STAT 420 <i>Quality Process Control from an Experimental Design Perspective</i>

MANA 404 is a capstone course that may not be taken until 8 of the 10 other required courses in the major have been completed. Students having strong mathematical backgrounds are encouraged to substitute courses that cover equivalent subject matter for STAT 280 and CAAM 376.

For more information, students should consult the program director, Ronald Soligo, in 268 Baker Hall.

**See MANA (page 428) in the Courses of Instruction section.**

# Mathematics

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## The Wiess School of Natural Sciences

### Chair

Robin Forman

### Professors

Michael Boshernitzan  
 Tim D. Cochran  
 Robert M. Hardt  
 F. Reese Harvey  
 Brendan Hassett  
 John Hempel  
 Frank Jones  
 John C. Polking  
 Stephen W. Semmes

Richard A. Stong

William A. Veech

Michael Wolf

### Associate Professor

Zhiyong Gao

### Instructors

Stanley Chang

Richard Evans

Joseph Masters

*Degrees Offered: B.A., M.A., Ph.D.*

The program in mathematics provides undergraduates with a spectrum of choices, from nontheoretical treatments of calculus and courses in modern algebra, elementary number theory, and projective geometry to a broad variety of sophisticated mathematics. These include real and complex analysis, differential geometry, abstract algebra, algebraic and geometric topology, algebraic geometry, and partial differential equations.

Faculty research interests range from differential geometry, ergodic theory, group representation, partial differential equations, and probability, to real analysis, mathematical physics, complex variables, algebraic geometry, geometric topology, and algebraic topology.

### Degree Requirements for B.A. in Mathematics

For general university requirements, see Graduation Requirements (pages 16–18). Students majoring in mathematics may choose between the regular math major and the double major. Regular math majors must complete:

- MATH 101 and 102 *Single Variable Calculus I and II*
- MATH 211 *Ordinary Differential Equations and Linear Algebra* and MATH 212 *Multivariable Calculus*  
 or MATH 221 and 222 *Honors Calculus III and IV*
- At least 24 semester hours (8 courses) in departmental courses at the 300 level or above (in many instances, the math department will waive the 100- and 200-level courses for a math major)

The requirements for the double major are the same except that students may substitute approved mathematics-related courses for up to 9 of the 24 hours required at the 300 level or above.

Students receive advanced placement credit for MATH 101 by achieving a score of 4 or 5 on the AP AB-level test and for MATH 101 and 102 by achieving a score of 4 or 5 on the BC-level test. Students who have had calculus but have not taken the AP test may petition the department for a waiver of the calculus requirements. Entering students should enroll in the most advanced course commensurate with their background; advice is available from the mathematics faculty during Orientation Week.

## Degree Requirements for M.A. and Ph.D. in Mathematics

Admission to graduate study in mathematics is granted to a limited number of students who have indicated an ability for advanced and original work. Normally, students take one or two years after the B.A. degree to obtain an M.A. degree, and they take four or five years to obtain a Ph.D. An M.A. is not a prerequisite for the Ph.D. For general university requirements, see Graduate Degrees (pages 60–65).

A number of graduate scholarships and fellowships are available, awarded on the basis of merit. As part of the graduate education in mathematics, students also engage in teaching or other instructional duties, generally for no more than 6 hours a week.

**M.A. Program.** Candidates for the M.A. in mathematics must:

- Complete with a grade of B or better a course of study approved by the department (students may transfer credits from another university only with the approval of both the department and the University Graduate Council)
- Perform satisfactorily on an examination in at least 1 approved foreign language (French, German, or Russian)
- Either complete all requirements for qualification as a candidate for the Ph.D. (see below) or present, and provide an oral defense of, an original thesis acceptable to the department

**Ph.D. Program.** Candidates for the Ph.D. in mathematics must:

- Complete with a grade of B or better a course of study approved by the department (students may transfer credits from another university only with the approval of both the department and the University Graduate Council)
- Perform satisfactorily on both qualifying examinations (see below)
- Perform satisfactorily on examinations in 2 approved foreign languages (French, German, or Russian)
- Write an original thesis acceptable to the department
- Perform satisfactorily on a final oral examination on the thesis

**Qualifying Examinations.** The qualifying examinations in mathematics consist of the general examinations and the advanced oral examination.

To complete the **general examinations**, students must take 3 exams, 1 each in algebra, analysis, and topology. Exams are offered every August and January. First-year students may take any combination of exams at any time. After two semesters of study, students must attempt to pass all remaining exams at each offering. Students must perform satisfactorily on all 3 by the start of their fifth semester. Students may take an exam several times.

To complete the **advanced oral examination**, students must select a special field (e.g., homotopy theory, several complex variables, or group theory) and submit it to the department Graduate Committee for approval. The committee schedules an advanced examination in the selected field, normally six to nine months after the student completes the general examinations. While students failing the advanced examination may, with the approval of the committee, retake it on the same or possibly on a different topic, they generally are not allowed to take the advanced examination more than twice.

**See MATH (pages 428–431) in the Courses of Instruction section.**

# Mechanical Engineering and Materials Science

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## The George R. Brown School of Engineering

### Chair

Tayfun E. Tezduyar

#### Professors

John E. Akin  
 Andrew R. Barron  
 Yildiz Bayazitoglu  
 Michael M. Carroll  
 Rex B. McLellan  
 Pol D. Spanos  
 James Tour

#### Professors Emeriti

Franz R. Brotzen  
 Alan J. Chapman  
 Angelo Miele  
 Ronald P. Nordgren  
 Chao-Cheng Wang

#### Associate Professors

Enrique V. Barrera  
 Fathi Ghorbel  
 Andrew J. Meade  
 Boris I. Yakobson

#### Assistant Professors

Marek Behr  
 S. Scott Collis  
 Chad M. Landis  
 Marcia E. O'Malley  
 Susanne Stemmer

#### Adjunct Professors

Yves Angel  
 Thomas A. Krouskop  
 Paul R. Paslay

#### Adjunct Associate Professor

Jeffrey D. Reuben

#### Adjunct Assistant Professor

Sarmed Adnan

Aladin Boriek

James B. Dabney

#### Visiting Assistant Professors

Catherine G. Ambrose

#### Lecturers

Robert Cunningham  
 David M. McStravick

*Degrees Offered:* B.A., B.S.M.E., B.S.M.S., M.M.E., M.M.S., M.S., Ph.D.

Studies in mechanical engineering may lead to specialization in one of several areas, including mechanics, computational mechanics, stochastic mechanics, fluid dynamics, heat transfer, dynamics and control, robotics, biomedical systems, and aerospace sciences. Studies in materials science may lead to specialization in one of several areas, including nanotechnology, metals physics, statistical mechanics, metallic solid thermodynamics, materials chemistry, aspects of composites, coatings and thin films, and interface science.

The graduate program offers professional degrees in both materials science and engineering, which is based on undergraduate preparation in a number of related fields, and mechanical engineering, which permits specialization in the areas mentioned in the previous paragraph. Graduate students may also pursue research degrees. Faculty research areas are indicated in the previous paragraph. A joint M.B.A./Master of Engineering degree is available in conjunction with the Jesse H. Jones Graduate School of Management. Also, a combined M.D. and advanced research degree for research careers in medicine is available with Baylor College of Medicine.

The graduate program collaborates with other departments in its comprehensive educational and research activities. The Department of Computational and Applied Mathematics supports research in applied analysis and computational mathematics.

Work on expert systems and robotics is done in cooperation with the Departments of Electrical and Computer Engineering and Computer Science. Computer graphics research involves the cooperation of the Department of Computer Science and the School of Architecture. The campus-wide Rice Quantum Institute is also active in the research of electronic materials and other aspects of materials science. Finally, biomechanics and biomaterials research involves several institutions in the Texas Medical Center.

### **Degree Requirements for B.A., B.S.M.E. in Mechanical Engineering or B.A., B.S.M.S. in Materials Science and Engineering**

The B.A. program in either mechanical engineering or materials science and engineering is highly flexible, involves less technical content, and allows students greater freedom to pursue areas of interest outside of engineering.

The two B.S. programs prepare students for professional practice of engineering. During their senior year, mechanical engineering students in the B.S. program take courses in design application while completing a major design project, and materials science and engineering students in the B.S. program work on a design problem in an industrial setting. The B.S.M.E. program is accredited by the Accreditation Board for Engineering and Technology (ABET). Departmental goals and objectives are available at <http://mems.rice.edu/undergraduate/goals.html>.

For general university requirements, see Graduation Requirements (pages 16–18). Lists of representative undergraduate courses and the usual order in which students take them are available from the department for either the B.A. or B.S. programs in both mechanical engineering and materials science and engineering. The B.S.M.E. degree contains a core of required courses and selected electives from 1 of 6 specialization areas. The requirements (131 hours) are:

#### **Basic Mathematics and Science (26 hours)**

CHEM 121 *Chemistry* (4)  
 MATH 101 *Single Variable Calculus I* (3)  
 MATH 102 *Single Variable Calculus II* (3)  
 MATH 211 *Ordinary Differential  
Equations and Linear Algebra* (3)  
 MATH 212 *Multivariable Calculus* (3)  
 MSCI 301 *Materials Science* (3)  
 PHYS 101 *Mechanics* (3)  
 PHYS 102 *Electricity and Magnetism* (4)

#### **Computational and Applied Mathematics (12 hours)**

COMP 110 *Computation in Science  
and Engineering* (3)\*  
 CAAM 211 *Engineering Computation* (3)  
 CAAM 335 *Matrix Analysis* (3)  
 CAAM 336 *Differential Equations in  
Science and Engineering* (3)

#### **Senior Design (7 hours)**

MECH 407 *Mechanical Design  
Project I* (3)  
 MECH 408 *Mechanical Design  
Project II* (4)

#### **Labs (3 hours)**

MECH 331 *Mechanics Lab* (1)  
 MECH 332 *Thermo/Fluids Lab* (1)  
 MECH 431 *Senior Lab* (1)

#### **Other Courses (32 hours)**

MECH 200 *Classical Thermodynamics* (3)  
 MECH 211 *Engineering Mechanics* (3)  
 MECH 311 *Mechanics-Deformable  
Solids* (3)  
 MECH 340 *Industrial Process Lab* (1)  
 MECH 343 *Modeling of Dynamic  
Systems* (4)  
 MECH 371 *Fluid Mechanics I* (3)  
 MECH 401 *Machine Design* (3)  
 MECH 412 *Vibrations* (3)  
 MECH 420 *Feedback Control of  
Dynamic Systems* (3)  
 MECH 481 *Heat Transfer* (3)  
 STAT 331 *Applied Probability* (3)

#### **Specialization Area Cluster Courses (12 hours)**

#### **Distribution Electives (24 hours)**

#### **Free Electives (15 hours)**

\* Transition: Students who are currently (2001) in the mechanical engineering program may substitute another course for COMP 110 with approval of the chair of the mechanical engineering Curricular Advising Committee.



**Specialization Area Options:** The Specialization Area can be 1 of the following 5 clusters. Students must take at least 2 of the following Required Cluster courses for their selected cluster and 2 from the departmental list of the Suggested Cluster Elective courses. The cluster advisors will update elective courses as needed and maintain lists of electives in the department. Also, there is a General Mechanical Engineering cluster. The Required Cluster courses are:

**1. Biomechanics**

BIOE 372 *Intro Biomechanics*  
MECH 380 *Tissue Mechanics*

**2. Computational Mechanics**

MECH 417 *Finite Element Analysis*  
MECH 452 *Finite Elements in Fluids*

**3. Fluid Mechanics and Thermal Science**

MECH 372 *Fluid Mechanics, II*  
MECH 471 *App. of Thermodynamics*

**4. Solid Mechanics and Materials**

CIVI 400 *Mechanics of Solids II*  
MSCI 402 *Mech. Properties of Materials*

**5. System Dynamics and Control**

MECH 498 *Intro to Robotics*  
MECH 435 *Electromechanical Systems*  
or ELEC 243 *Intro to Electronics*

**6. General Mechanical Engineering**

Any 4 required courses listed above may be taken to define a general cluster.

**B.A. Program.** Students seeking the B.A. degree with a major in mechanical engineering must complete 120 hours with at least 67 semester hours in courses specified by the department along with 24 hours of university distribution electives and 29 hours of free electives. Lists of courses, including general university requirements and the usual order in which students take them are available from the department. The B.A. program mirrors the B.S.M.E. program in the freshman and sophomore years with the exceptions that MECH 340 and MECH 331 are not required. Specific major requirements are completed in the junior and senior years along with electives. A summary appears below:

**Freshman Year:** Same as B.S. with 23 major and 9 elective hours for 32 hours.

**Sophomore Year:** Same as B.S. (except MECH 340 and 331 are not required) with 20 major and 13 elective hours for 33 hours.

**Junior and Senior Years:** 24 major and 31 electives for 55 hours. The following courses are required in junior and senior years:

CAAM 335 *Matrix Analysis* (3)  
CAAM 336 *Differential Equations in Science and Engineering* (3)  
MECH 343 *Modeling of Dynamic Systems* (4)  
MECH 371 *Fluid Mechanics I* (3)

MECH 401 *Machine Design* (3)  
MECH 412 *Vibrations* (3)  
MECH 420 *Feedback Control of Dynamic Systems* (3)  
MECH 481 *Heat Transfer* (3)

Students seeking the **B.A.** degree with a major in materials science and engineering must complete at least 52 hours in courses specified by the department plus additional hours for a total of 120 hours at graduation.

Students seeking the **B.S.M.S.** must complete at least 91 semester hours in courses specified by the department within the total requirements of 134 hours. Basic departmental course requirements for the B.S.M.S. are:

CHEM 121–122 *General Chemistry*  
 MATH 101 and 102 *Single Variable Calculus I and II*  
 MATH 211 *Ordinary Differential Equations and Linear Algebra*  
 MATH 212 *Multivariable Calculus*  
 MECH 211 *Engineering Mechanics*  
 MSCI 301 *Materials Science*  
 PHYS 101 *Mechanics*  
 PHYS 102 *Electricity and Magnetism*

### **Specific requirements**

CAAM 211 *Introduction to Engineering Computation*  
 CAAM 335 *Matrix Analysis*  
 CIVI 300 *Mechanics of Solids*  
 ELEC 241 *Fundamentals of Electrical Engineering I* (or ELEC 243 *Introduction to Electronics*)  
 MSCI 301 *Materials Science*  
 MSCI 303 *Materials Science Junior Lab*  
 MSCI 311 *Introduction to Design*  
 MSCI 401 *Thermodynamics and Transport Phenomena in Materials Science*  
 MSCI 402 *Mechanical Properties of Materials*

MSCI 404 *Materials Engineering and Design*  
 MSCI 406 *Physical Properties of Solids* (or MSCI 415 *Ceramics and Glasses*)  
 MSCI 411 *Metallography and Phase Relations* (or MSCI 415 *Ceramics and Glasses*)  
 MSCI 500/501 *Materials Science Seminar*  
 MSCI 535 *Crystallography and Diffraction*  
 MSCI 537 *Materials Science Senior Lab*  
 MSCI 594 *Properties of Polymers*

### ***I course from the following***

PHYS 201 *Waves and Optics*  
 CHEM 211 *Organic Chemistry*  
 CHEM 311 *Physical Chemistry*

### **Electives**

1 approved science elective (at the 200 level or higher)  
 1 approved engineering science elective (not MSCI)  
 1 approved technical elective

## **Degree Requirements for M.M.E., M.M.S., M.S., and Ph.D. in Mechanical Engineering or Materials Science and Engineering**

**Professional Degree Programs.** The professional degrees offered by this department, the Master of Mechanical Engineering (M.M.E.) and the Master of Materials Science (M.M.S.), involve a fifth year of specialized study, which is integrated with the four undergraduate years leading to either the B.A. or the B.S. degree in the same areas of interest. The professional degree programs are open to students who have shown academic excellence in their undergraduate studies.

For general university requirements, see Graduate Degrees (pages 60–65). For both the M.M.E. and M.M.S. degrees, students must complete 30 semester hours of course work. Lists of suggested courses are available from the department. Students should develop a specific plan of study based on their particular interests.

**Research Degree Programs.** The programs leading to the M.S. and Ph.D. degrees are open to students who have demonstrated outstanding performance in their undergraduate studies. The granting of a graduate research degree presupposes academic work of superior quality and a demonstrated ability to do original research.

For general university requirements, see Graduate Degrees (pages 60–65). Course requirements for the research degrees vary, depending on the extent of individual undergraduate preparation as well as each student's performance in graduate courses and on qualifying examinations. For both the M.S. and Ph.D. degrees, students must present a thesis that comprises an original contribution to knowledge and defend it in a public oral examination.

**See MECH (pages 441–447) and MSCI (pages 467–469) in the Courses of Instruction section.**

# Medieval Studies

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## The School of Humanities

### Director and Adviser

Honey Meconi

#### Professors

Jane Chance

Gilbert Morris Cuthbertson

Donald Ray Morrison

Deborah Nelson-Campbell

#### Associate Professors

Michael Maas

Linda E. Neagley

Carol E. Quillen

Paula Sanders

#### Assistant Professors

David Cook

Eva Haverkamp

Scott McGill

Rafael M. Mérida-Jiménez

#### Lecturer

E. Douglas Mitchell

### *Degree Offered: B.A.*

This interdisciplinary major enables students to compare medieval cultures, noting both their differences and their common traditions, in the period between 500 and 1500 A.D. The program combines a broad background in various aspects of medieval culture with more specialized study in a selected field. These fields of emphasis include art history, history, medieval literature (English, French, German, Spanish, or Latin), music, philosophy, or religion.

### Degree Requirements for B.A. in Medieval Studies

For general university requirements, see Graduation Requirements on pages 16–18. Students majoring in medieval studies must complete at least 36 semester hours (12 courses); the minimum for double majors is 30 hours. All majors must complete 6 of these medieval studies courses at the 300 or 400 level. Required courses include the following:

1 of the following courses:

- MDST 202 *Introduction to Medieval Civilization: The Early Middle Ages*
- MDST 203 *Introduction to Medieval Civilization: The High Middle Ages*

1 medieval literature course

1 of the following courses:

- MDST 330 *Early Medieval Art from 5th Century to Romanesque Period*
- MDST 331 *Gothic Art and Architecture in Northern Europe, 1140–1300: The Age of Cathedrals*
- MDST 222 *Medieval and Renaissance Music*
- MDST 429 *Music of the Middle Ages*

1 of the following courses:

- MDST 257 *Jews and Christians in Medieval Europe*
- MDST 357 *Jews and Christians in Medieval Europe* (enriched version)
- MDST 382 *Classical Islamic Culture*
- MDST 201 *History of Philosophy I*

Two semesters of foreign language study, determined in consultation with the medieval studies adviser.

Three courses (at least 2 at the 300 or 400 level) in the student's chosen field of emphasis. One of these may be a directed reading course.

For single majors, 3 additional courses in the medieval period, 1 of which may be a senior thesis (one semester) on a topic in the student's field of emphasis. For double majors, 1 additional course in the medieval period.

Students work out their programs of study in consultation with the program director. Those contemplating graduate work in medieval studies should study at least 1 foreign language in some depth (as most graduate schools require a reading knowledge of French and German for the Ph.D.)

**For a current list of courses offered in fall 2001/spring 2002, please visit the MS web site at <http://www.ruf.rice.edu/~medieval>.**

**NOTE:** Courses listed with an asterisk (\*) after the course number will be offered during the 2001–2002 academic year.

Students may select from among the following to fulfill the course requirements for the major in medieval studies.

### **Classics**

MDST 101\* *Elementary Latin I*  
 MDST 102\* *Elementary Latin II*  
 MDST 211\* *Intermediate Latin I*  
 MDST 212\* *Intermediate Latin II*

### **English**

MDST 300\* *Medieval Literature: Medieval Women Writers*  
 MDST 300\* *Medieval Literature: Dante (In Translation)*  
 MDST 311 *Old English*  
 MDST 312 *Survey of Old English Literature: Gender and Power in Old English*  
 MDST 313 *Beowulf*  
 MDST 314 *Survey of Middle English Literature*  
 MDST 315 *Introduction to Medieval Culture, 1000-1492*  
 MDST 316 *Chaucer*  
 MDST 317 *Arthurian Literature*  
 MDST 318\* *J.R.R. Tolkien*  
 MDST 368\* *Mythologies*  
 MDST 395\* *History of the English Language*

MDST 406 *Christine de Pizan in 15th-Century England*  
 MDST 412 *Medieval Studies*  
 MDST 416 *Chaucer and the Subversive Other: Women, Gender, Nation, Class*  
 MDST 417 *Medieval Women Writers*  
 MDST 445 *Christine de Pizan in 15th-Century England* (enriched version)  
 MDST 461\* *Directed Reading*  
 MDST 462\* *Directed Reading*  
 MDST 472 *Old English and Contemporary Theory*  
 MDST 478 *Medieval Studies Special Topics*

### **French**

MDST 410 *The Literary and Historical Image of the Medieval Woman*  
 MDST 411 *The Literary and Historical Image of the Medieval Woman* (enriched version)  
 MDST 414 *Literature and Culture of the Middle Ages: Saints and Sinners*  
 MDST 415\* *Courtly Love in Medieval France*

MDST 425 *Courtly Love in Medieval France (enriched version)*

MDST 436 *Literature and Culture of the Middle Ages: King Arthur*

### **History of Art**

MDST 108\* *Art in Context: Late Medieval and Renaissance Culture*

MDST 111\* *Introduction to the History of Western Art I: Prehistoric to Gothic*

MDST 327 *Late Antique/Early Christian Art and Architecture*

MDST 330\* *Early Medieval Art from 5th Century to Romanesque Period*

MDST 331 *Gothic Art and Architecture in Northern Europe, 1140–1300: The Age of Cathedrals*

MDST 332 *Late Gothic Art and Architecture in Northern Europe, 1300–1500*

MDST 336\* *Art and Architecture in the Middle East: Late Medieval Period through the Modern Period*

MDST 338\* *Special Topics in Medieval Art*

MDST 339\* *Independent Study in Medieval Art*

MDST 355 *Art and Architecture in the Middle East in the Medieval Period (632–1250)*

MDST 427\* *Issues in Islamic Architecture*

MDST 430 *The Gothic Portal*

MDST 439\* *Hieronymus Bosch: Problems of Interpretation*

MDST 440 *Jan van Eyck: Problems of Interpretation*

### **History**

MDST 202\* *Introduction to Medieval Civilization: The Early Middle Ages*

MDST 203\* *Introduction to Medieval Civilization: The High Middle Ages*

MDST 257\* *Jews and Christians in Medieval Europe*

MDST 259\* *The Medieval Cultures of Judaism and Christianity*

MDST 273 *Ancient and Medieval Jewish History, 70–1492*

MDST 281\* *The Middle East from the Prophet Muhammad to Muhammad Ali*

MDST 303\* *Undergraduate Independent Reading*

MDST 304\* *Undergraduate Independent Reading*

MDST 308 *The World of Late Antiquity*

MDST 320 *Science in Antiquity and the Middle Ages*

MDST 321\* *Directed Readings in Medieval History*

MDST 322\* *Directed Readings in Medieval History*

MDST 325\* *Introduction to Medieval Civilization: The Early Middle Ages (enriched version)*

MDST 326\* *Introduction to Medieval Civilization: The High Middle Ages (enriched version)*

MDST 345 *Early Modern Europe: Humanism and Expansion*

MDST 357\* *Jews and Christians in Medieval Europe (enriched version)*

MDST 359\* *The Medieval Cultures of Judaism and Christianity*

MDST 373 *Ancient and Medieval Jewish History, 70–1492 (enriched version)*

MDST 382 *Classical Islamic Culture*

MDST 384 *The Crusades: Holy War in Medieval Christendom and Islam*

MDST 385 *Christians and Jews in the Medieval Islamic World*

MDST 387 *Life on the Nile: Egyptian Politics, Culture, and Society, Medieval to Modern Times*

MDST 438 *Women and Gender in Islamic Societies*

MDST 444\* *Memory and Commemorization in the Middle Ages*

MDST 446 *Jewish Communities in the Middle Ages and Early Modern Times*

MDST 455 *Guide to the Sources of Medieval History*

MDST 460 *Advanced Seminar in Ancient History: The Age of Justinian*

MDST 465\* *Jews and Christians: Perceptions of the Other*

MDST 488\* *Topics in Medieval History*

**Linguistics**

MDST 311 *Old English*  
 MDST 395\* *History of the English  
 Language*

**Music**

MDST 222\* *Medieval and  
 Renaissance Music*  
 MDST 429\* *Music of the Middle Ages*  
 MDST 456\* *Collegium*  
 MDST 441 *Hildegard of Bingen*  
 MDST 486\* *Illuminated Music  
 Manuscripts*

**Philosophy**

MDST 201\* *History of Philosophy I*  
 MDST 301\* *Ancient and Medieval  
 Philosophy*  
 MDST 481\* *Seminar in Ancient and  
 Medieval Philosophy*

**Political Science**

MDST 340 *Ancient and Medieval  
 Political Theory*

**Spanish**

MDST 319 *Survey of Spanish Literature*  
 MDST 391\* *Hispanic Women Writers*  
 MDST 418\* *Studies in Medieval  
 Spanish Literature*  
 MDST 424 *Studies in Hispanic  
 Linguistics*  
 MDST 426 *Women and Gender in  
 Medieval Iberia*  
 MDST 428\* *Studies in Medieval Spanish  
 Literature* (enriched version)

**For complete course descriptions, see MDST (pages 431–440) in the Courses of Instruction section.**

# Military Science

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## Chair and Professor

Lieutenant Colonel Charles R. Reed

## Assistant Professors

Master Sergeant Henry Jackson

Sergeant First Class Tol Avery

Major Paul Gass

Major Kerry A. Reyna

Captain Ywain A. Whitfield

The goal of the U.S. Army ROTC program is to develop technically competent, physically fit, and highly motivated men and women for positions of responsibility as commissioned officers in the active army, the army reserve, and the National Guard. Upon completion of the curriculum, students will have an understanding of the fundamental concepts and principles of the military as an art and as a science. The leadership and managerial experience gained through ROTC provides great benefit for students in both their civilian endeavors and in their military careers.

## Degree Requirements for Military Science Program

For general university requirements, see Graduation Requirements (pages 16–18). Further details on ROTC programs at Rice are available on page 23. For more information on the Army ROTC program in particular, contact the military science department at the University of Houston by calling 713-743-3875.

**Statutory Authority.** General statutory authority for establishment and operation of the ROTC program, including the scholarship program, is contained in Title 10, United States Code, Chapter 103 (Sec. 2102-2111). Specific rules and procedures are found in U.S. Army Regulation 145-1.

**Course Credit.** ROTC classes may be taken for elective credit toward any degree plan at the University of Houston. Freshman- and sophomore-level classes are open to all students, regardless of age or physical condition. *No military obligation is incurred as a result of enrollment in these courses.* Junior- and senior-level courses are more restrictive and do require a military obligation. ROTC scholarship students also incur a military obligation.

**Four-Year Program.** The four-year program is divided into two courses: the basic course, which is normally attended by students during their freshman and sophomore years, and the advanced course, attended during the junior and senior years. Advanced course students attend a six-week advanced camp in Fort Lewis, Washington, normally between their junior and senior years.

**The Basic Course.** The basic course consists of four semesters of military science, which include MILI 121, MILI 122, MILI 201, and MILI 202. These freshman- and sophomore-level classes are open to all students without obligation.

**The Advanced Course.** Students entering the advanced course must enter into a contract to pursue and accept a commission in the active army, the army reserve, or the

National Guard. To be considered for contracting into the advanced course, the student must be a full-time student in a course of instruction that leads to a degree in a recognized academic field, have a minimum of two years of academic work remaining in a curriculum leading to a baccalaureate or advanced degree, be under age 30 when commissioned, and pass a physical examination.

**Two-Year Program.** The two-year program is designed for students who did not take the basic course but are otherwise eligible to enroll in the advanced course. This program allows students completing their sophomore year to attend a five-week “basic camp” during June and July at Fort Knox, Kentucky, in lieu of taking the first two years of ROTC. *There is no military obligation for attending basic camp.* The army provides transportation, room, and board. Students are paid approximately \$700 for the five-week period.

**Laboratory Requirements.** A military science laboratory is required for students enrolling in MILI 121, MILI 122, MILI 201, MILI 202, MILI 301, MILI 302, MILI 401, and MILI 402. This laboratory provides opportunities for marksmanship training, rappelling, drill and ceremonies, communications training, and other activities.

**Veterans.** Veterans who have served on active duty or in the army reserve or National Guard are also eligible for the ROTC program. Although veterans are not required to take the basic course, they are encouraged to do so. All students, including veterans, must have a minimum of 60 credit hours prior to enrolling in the advanced course.

**National Guard and Army Reserve Members.** Students enrolled in ROTC may also be members of the Army Reserve/National Guard. Through the Simultaneous Membership Program (SMP), those students enrolled in the advanced course will be placed in a leadership position as a cadet and will receive pay and entitlements from the National Guard or Army Reserve in the pay grade of Sergeant (E-5).

**Financial Assistance.** The United States Army offers, on a competitive nationwide basis, four-, three-, and two-year scholarships. The scholarships cover up to \$16,000 of tuition. Recipients also receive benefits for educational fees (to include lab fees), a book allowance, and a subsistence allowance of \$300 per month. Applicants must be U.S. citizens and must be under age 27 on the anticipated graduation date. Applications are available from the military science department. Veteran applicants can extend the age limit up to a maximum of three years, based on prior active duty service.

**Other Financial Aid.** All students enrolled in the advanced course will receive a subsistence allowance of \$300 per month. For more information, contact the military science department. GI Bill recipients still retain benefits.

**Tuition.** Members of the army or the National Guard, Texas State Guard, or other reserve forces may be exempted from the nonresident tuition fee and other fees and charges.

**Special Training.** Basic- and advanced-course students may volunteer for and may attend the U.S. Army Airborne and Air Assault courses during June, July, and August. Cadet Troop Leadership training positions are also available to advanced-course cadets during the summer months.



**Miscellaneous.** Cadets in the advanced course are paid an allowance of \$300 per month during the school year. Military textbooks and uniforms are furnished to all cadets.

The Corps of Cadets sponsors an annual military ball in addition to other social events throughout the school year. The Department of Military Science sponsors extracurricular activities such as the University of Houston Color Guard and the Ranger Challenge Team.

**Minor in Military Science.** To qualify for a minor in military science, students must complete a minimum of 18 semester hours of course work, of which 12 must be advanced. Nine semester hours must be completed in residence, of which 6 must be advanced. Students must also attend advanced camp. Students must attain a 2.00 grade point average or higher in military science courses attempted at this university. Students may receive credit for 100- and 200-level courses based on prior military training, completion of ROTC Basic Camp, completion of JROTC training, or completion of one year at a service academy.

**See MILI (pages 465–466) in the Courses of Instruction section (these are University of Houston listings).**

# Music

## The Shepherd School of Music

### Dean

Michael P. Hammond

### Professors

Edward Applebaum  
 Richard Brown  
 Leone Buyse  
 Marcia J. Citron  
 James Dunham  
 Paul V. H. Ellison  
 Joyce Farwell  
 Norman Fischer  
 Armando Ghitalla  
 Kenneth Goldsmith  
 Arthur Gottschalk  
 Clyde Holloway  
 Kathleen Kaun  
 Richard Lavenda  
 Sergiu Luca  
 Jon Kimura Parker  
 Larry Rachleff  
 Robert Roux  
 Anne Schnoebelen  
 Kathleen Winkler

### Professor Emeritus

Raphael Fliegel

### Associate Professors

Robert Atherholt  
 Walter B. Bailey  
 Desmond Hoebig  
 Thomas I. Jaber  
 Benjamin C. Kamins

David E. Kirk  
 Honey Meconi  
 William B. Murray  
 Paula Page  
 David Peck  
 Timothy Pitts  
 Karen Ritscher  
 William Ver Meulen  
 David L. Waters  
 Michael Webster

### Assistant Professors

Anthony K. Brandt  
 Shih-Hui Chen  
 David Ferris  
 Pierre Jalbert

### Artist Teachers

Brian Connelly  
 Jan de Chambrier  
 Debra Dickinson  
 Jeanne Kierman Fischer  
 Michael Franciosi  
 Janet Rarick  
 C. Dean Shank, Jr.

### Lecturer

Nancy Gisbrecht Bailey

### Adjunct Lecturers

C. Richard Stasney  
 Pieter A. Visser

*Degrees Offered:* B.A., B.Mus., B.Mus./M.Mus., M.Mus., D.M.A.

At the undergraduate level, the Shepherd School of Music offers both professional training and a broad liberal arts curriculum. Degree programs include a B.A. degree in music and a B.Mus. degree in performance, composition, music history, and music theory. Acceptance into a five-year honors program leads to the simultaneous awarding of the B.Mus. and M.Mus. degrees.

At the graduate level, the school offers professional music training for qualified students who concentrate on music composition, performance, or research that is supported by lab or performing ensembles. This training includes theory and history seminars. Advanced degree programs include a M.Mus. degree in composition, choral and instrumental conducting, historical musicology, performance, and music theory and a D.M.A. degree in composition and selected areas of performance.

## Requirements for All Music Majors

All students majoring in music must participate in core music, applied music, and other required music courses, as well as in chamber music and large ensembles, taking nonmusic courses as specified by the university plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees. Students in the B.A. program who wish to continue taking private lessons beyond the required four semesters of instrumental or vocal study must obtain permission from the dean of the Shepherd School.

**Examinations.** At the end of each semester, a jury examination in applied music is given over the material studied during the semester. (All degree candidates except B.A. students must demonstrate keyboard proficiency in an examination. If students have little or no knowledge of the keyboard, they should enroll in secondary piano at the beginning of their first semester and continue study until they can meet the examination requirements.)

**Performance.** Students are expected to perform frequently during their residence at Rice. Performance majors must present at least 2 full recitals. Composition and conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all music majors must participate in the school's conducted ensembles as assigned.

## Degree Requirements for B.A. in Music, B.Mus., and B.Mus./M.Mus.

**Admission.** An audition, either in person or on tape, is required of each undergraduate applicant. The Shepherd School faculty and the university's Committee on Admission jointly determine admission, the latter basing its evaluation upon successful academic achievement and other standards of college admission. Transfer applicants from other colleges, conservatories, and universities must also provide an audition, personal or taped, and take placement exams in both music history and music theory. Once admitted, their prior preparation in music is assessed, which may reduce the required period of study at Rice.

**B.A. and B.Mus. Program.** For general university requirements, see Graduation Requirements (pages 16–18). Note that MUSI 222 and 321 may be counted towards partial fulfillment of the Group I (humanities) distribution requirement, and that MUSI 311 and 312 may be counted towards partial fulfillment of the Group III (natural science/engineering) distribution requirement.

For either bachelor's degree, students majoring in music must have a total of at least 120 semester hours at graduation. The complete curriculum for each major in music is available in the *Shepherd School Student Handbook* or in the undergraduate music office on the second floor of Alice Pratt Brown Hall. While the number of required hours vary according to major area, all music students must take the following core courses (those in the B.A. program do not need to take MUSI 331, 332 and 431).

- *Music Theory:* MUSI 211, 212, 311, 312, and a theory elective chosen from MUSI 412, 416, 513, or 613.
- *Music History:* MUSI 222, 321, 322, and 421
- *Aural Skills and Performance Techniques:* MUSI 231, 232, 331, 332, and 431

**B.Mus./M.Mus. Honors Program.** The same general university requirements apply, but students seeking the combined B.Mus./M.Mus. degree must complete a total of at least 150 semester hours by graduation. The number of required hours varies according to major area.

The first five semesters of course work in this program parallel the core curriculum of the bachelor's degrees. The sixth semester is a transitional semester during which students qualify for admission to the combined program. For further information, including application procedures, see the *Shepherd School Student Handbook*.

### **Degree Requirements for M.Mus. and D.M.A. in Music**

**Admission.** For instrumental and conducting applicants, an audition is required. Composition majors must submit portfolios, and musicology and theory majors must provide samples of their written work. The Graduate Record Examination (GRE) is required of graduate applicants in musicology, theory, and composition. Musicology applicants must also complete the advanced music tests.

**Requirements.** For general university requirements, see Graduate Degrees (pages 60–65). For the M.Mus. degree, candidates must complete at least two semesters of full-time study at Rice. Semester hour minimums for the M.Mus. degree vary according to major area. For the D.M.A., candidates must complete a total of 90 hours beyond the bachelor's degree, attending Rice full time for at least four semesters after receiving their M.Mus. degree.

**Thesis.** A thesis is required of both music history and music theory majors. In lieu of a thesis, composition majors must produce an original work of extended scope, and conducting majors must present an extended composition or project.

### **Academic Standards**

**Curriculum and Degree Requirements.** Further information on curricular requirements for all majors and degree programs is available from The Shepherd School of Music.

**Grading Policy.** *All* music students must make at least a B- in course work in their major applied area. Students who receive a C+ or lower in their major applied area are placed on music probation. Students on music probation may not graduate unless they show prompt and marked improvement. While on probation, they may not be absent from class except for extraordinary reasons, and they may not represent the school in any public function that is not directly part of a degree program. After receiving a second C+ or lower in their major area, whether in consecutive semesters or not, students are discontinued as music majors.

**Leaves of Absence and Voluntary Withdrawal.** Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean's office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed re-admission into the Shepherd School and may be asked to re-apply/re-audition. (Students should explain the reasons for their withdrawal to the dean before leaving campus.)

## Other Musical Opportunities

**For Nonmajors.** Students who are not music majors may take the following courses designed for the general student (other music courses require the permission of the instructor and the approval of the dean of the Shepherd School).

- MUSI 117/118 *Fundamentals of Music I and II*
- MUSI 307 *Composition for Nonmajors*
- MUSI 317/318 *Theory for Nonmajors I and II*
- MUSI 327/328 *Music Literature for Nonmajors I and II*
- MUSI 334/335 *Campanile Orchestra and Rice Chorale*
- MUSI 141–197 for individual instruction in all instruments
- MUSI 340 *Concert Band*
- MUSI 342 *Jazz Ensemble*
- MUSI 345 *Jazz Improvisation*
- MUSI 415 *Band Arranging*

**Lectures and Performances.** A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Texas Opera Theater, Houston Ballet, Houston Oratorio Society, Da Camera, Context, and Houston Friends of Music, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

**See MUSI (pages 470–483) in the Courses of Instruction section.**

# Naval Science

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## Chair

James K. York

## Assistant Professors

Kelley Frederickson

M. D. Hale

Paul Kane

Students enroll in the Navy Reserve Officers' Training Corps (ROTC) program as scholarship or nonscholarship students. Sophomores may apply for the optional two-year program. The Department of Naval Science is administered by a senior U.S. Navy officer, assisted by officers and enlisted personnel of the U.S. Navy and Marine Corps.

## Degree Requirements for Naval Science Program

For general university requirements, see Graduation Requirements (pages 16–18). For further details on ROTC programs at Rice, see page 23. Program requirements differ slightly depending on the student's scholarship status.

Scholarship Navy ROTC students are appointed midshipmen, U.S. Naval Reserve, on a nationwide competitive basis. They receive retainer pay of \$250–\$350 per month for a maximum of four academic years, with all tuition, fees, and equipment paid for by the government. Additionally, students receive \$250 per semester for books. Midshipmen must complete the prescribed naval science courses and participate in drills and three summer cruises. After graduating with a bachelor's or graduate degree, they accept a reserve commission as an ensign in the U.S. Navy or as a second lieutenant in the U.S. Marine Corps.

Nonscholarship Navy ROTC students enter into a mutual contract with the Secretary of the Navy to take naval science courses and to participate in drills and one summer training cruise. On a competitive basis, students may apply to continue in the Navy ROTC program through their junior and senior years. The U.S. Navy pays these continuing students \$300–\$350 per month during their junior and senior years, offering them a reserve commission in the U.S. Navy or Marine Corps upon graduation. The program chair may recommend nonscholarship students, on a local competitive basis, for scholarship status.

**Two-Year Program Option.** In their sophomore year (junior year for five-year Rice students), students may apply for the two-year Navy ROTC program, competing nationwide for available scholarships. If selected, they attend the six-week Naval Science Institute (NSI) at Newport, Rhode Island, during July and August. NSI provides students with course material and training normally covered during the first two years of the regular Navy ROTC program. Successful completion of NSI qualifies students for enrollment in the advanced Navy ROTC program on an equal footing with the four-year students. Usually about 15 percent of the nonscholarship students finishing NSI are offered two-year Navy ROTC scholarships. Additional scholarships occasionally may be awarded to others upon the recommendation of the program chair.

**U.S. Marine Corps Program.** Navy ROTC students, either scholarship or nonscholarship, may apply for the U.S. Marine Corps program. Students selected for that program are referred to as "Marine Corps option students" and attend separate classes under a U.S. Marine officer instructor during their junior and senior years.

**See NAVA (page 483–484) in the Courses of Instruction section.**

# Neurosciences

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## The School of Social Sciences

### Director

James R. Pomerantz

### Professors

Steven J. Cox  
 John W. Clark  
 Raymon M. Glantz  
 Michael P. Hammond  
 Don H. Johnson  
 Randi C. Martin  
 Daniel Osherson  
 James R. Pomerantz  
 Moshe Y. Vardi  
 Rick K. Wilson

### Professor Emeritus

Sydney M. Lamb

### Associate Professors

Michael Stern  
 Devika Subramanian

### Assistant Professors

Robert Nowak  
 Geoffrey F. Potts  
 Tony Ro

*Degrees Offered: none*

In the 1999–2000 academic year, Rice University began offering a new set of courses in the area of Neuroscience to supplement a set of courses already offered by various departments in closely allied areas. These courses, which carry the designation NEUR, are offered in part by faculty associated with the Division of Neurosciences at Baylor College of Medicine and in part by faculty at Rice in several different departments (including Biochemistry and Cell Biology; Computer Science, Electrical and Computer Engineering, Linguistics, and Psychology.) They are intended primarily for Rice graduate students but, with permission may be available to advanced undergraduates. Some of these classes are taught at the nearby Baylor campus, and some are taught according to Baylor's academic calendar, which is different from Rice's. For further information on what courses are available and for instructions on how to apply to enter these classes, consult Rice's neuroscience website at <http://www.ruf.rice.edu/~neurosci/>.

### Courses

NEUR 511(F) *Integrative Neuroscience Core I*

NEUR 512(S) *Integrative Neuroscience Core I*

# Philosophy

## The School of Humanities

### Chair

Steven G. Crowell

### Professors

Baruch Brody  
 Hugo Tristram Engelhardt, Jr.  
 Richard E. Grandy  
 Mark Kulstad  
 Donald Ray Morrison  
 George Sher

### Assistant Professors

Nomy Arpaly  
 Eric Margolis  
 Sherrilyn Roush  
 Rachel Zuckert  
**Adjunct Professor**  
 Laurence McCullough

*Degrees Offered:* B.A., M.A., Ph.D.

Philosophy is best described as the attempt to think clearly and deeply about the fundamental questions that arise for us as human beings. What is the nature of knowledge (epistemology)? How are we to distinguish between what really is and what only seems to be (metaphysics)? What is the right thing to do (ethics)? Is there any meaning to existence? To study the history of philosophy is to study the best, most enduring answers that have been given to these questions in the past. Because every other field of study adopts some stance toward these questions, though often implicitly, philosophical issues arise in the natural and social sciences, history, linguistics, literature, art, and so on. Special courses in philosophy deal with each of these. Characteristic of philosophy are commitments to the construction and evaluation of arguments, to expressing thoughts clearly and precisely, and to defending one's ideas and evaluating the ideas of others. The study of philosophy thus provides resources for critical participation in all realms of human endeavor.

The graduate program trains students to teach and pursue research in the main areas of department concentration: ethics (especially bioethics) and social and political philosophy, history of philosophy, continental philosophy, and core portions of contemporary analytic philosophy.

### Degree Requirements for B.A. in Philosophy

For general university requirements, see Graduation Requirements (pages 16–18). Students majoring in philosophy must complete 30 semester hours (10 departmental courses); At least 18 hours (6 courses) must be at the 300 level or above. A double major must complete 27 hours (9 departmental courses) with all other requirements remaining the same. Majors must take the following specific courses.

PHIL 201/202 *History of Philosophy I and II*

PHIL 306 *Ethics*  
 or PHIL 307 *Social and Political Philosophy*

PHIL 106 *Logic*  
 or PHIL 305 *Mathematical Logic*

**2 courses in the history of philosophy from the following:**

PHIL 301 *Ancient and Medieval Philosophy*  
 PHIL 302 *Modern Philosophy*  
 PHIL 308 *Continental Philosophy*  
 PHIL 321 *Kant and 19th-Century Philosophy*



Students may substitute PHIL 304 Metaphysics, PHIL 303 Theory of Knowledge, or PHIL 353 Philosophy of Language for one of the history courses.

### **Degree Requirements for M.A. and Ph.D. in Philosophy**

For general university requirements, see Graduate Degrees (pages 60–65). Students have the additional option of applying for a doctoral program specializing in bioethics (see below).

For the **M.A.** in philosophy, candidates must:

- Complete with high standing at least 30 semester hours in advanced courses approved by the department
- Complete a written thesis on a subject approved by the department
- Perform satisfactorily on a final oral examination (not limited to the student's special field of study)

For the **Ph.D.** in philosophy, candidates must:

- Complete with high standing 42 hours of course work approved by the department (including logic)
- Demonstrate competence in logic
- Pass a qualifying examination
- Perform satisfactorily on an oral defense of their thesis proposal
- Complete a written thesis on a subject approved by the department (at least one year of thesis research must be spent in residence)
- Perform satisfactorily on a final oral examination (not limited to the student's special field of study)

### **Bioethics Program**

The Ph.D. in philosophy with a specialization in medical ethics is offered in cooperation with the Center for Medical Ethics and Health Policy at Baylor College of Medicine. Applicants to this special program must have enough background in philosophy to complete two and a half years of strong general training in philosophy at the graduate level. After completing their general training, students receive instruction in clinical bioethics at Baylor College of Medicine and then write a dissertation drawing upon their philosophical and clinical training. Further information about this program is available from the Department of Philosophy.

### **Continental Philosophy Program**

The Ph.D. program in Continental philosophy allows graduate students to take advantage of resource faculty in history, French studies, philosophy, and religious studies, all of whom have done distinguished philosophical work in the Continental tradition. Students master the basic fields of analytic philosophy while doing a substantial amount of their course work with resource faculty. Further information is available from the Department of Philosophy.

**See PHIL (pages 485–490) in the Courses of Instruction section.**

# Physics and Astronomy

## The Wiess School of Natural Sciences

### Chair

F. Barry Dunning

### Professors

Stephen D. Baker  
 Billy E. Bonner  
 Paul A. Cloutier  
 Marjorie D. Corcoran  
 Ian M. Duck  
 Reginald J. Dufour  
 Arthur A. Few, Jr.  
 James P. Hannon  
 Thomas W. Hill  
 Huey W. Huang  
 Randall G. Hulet  
 Neal Lane  
 Eugene H. Levy  
 Edison P. Liang  
 Hannu E. Miettinen  
 Gordon S. Mutchler  
 Peter Nordlander  
 Carl Rau  
 Patricia H. Reiff  
 Jabus B. Roberts, Jr.  
 Richard E. Smalley  
 Paul M. Stevenson  
 Richard A. Wolf  
**Professors Emeriti**  
 Thomas L. Estle  
 John W. Freeman  
 William E. Gordon, *Distinguished*  
 F. Curtis Michel  
 Ronald F. Stebbings  
 G. King Walters  
**Associate Professors**  
 Anthony A. Chan  
 Stanley A. Dodds  
 Patrick M. Hartigan  
 Qimiao Si

### Assistant Professors

Matthew G. Baring  
 Jason H. Hafner  
 Thomas C. Killian  
 Christopher Johns-Krull  
 Douglas A. Natelson  
 Uwe Oberlack  
 Alexander J. Rimberg  
 B. Paul Padley  
 Frank R. Toffoletto

### Adjunct Professors

David C. Black  
 James L. Burch  
 Franklin R. Chang-Diaz  
 Carolyn Sumners  
 J. David Winningham

### Adjunct Associate Professors

James H. Newman  
 Tomasz F. Stepinski

### Instructors

Nathan Harshman  
 Gary A. Morris

### Distinguished Faculty Fellow

Edward B. Platner

### Senior Faculty Fellows

William J. Llope  
 Pablo P. Yepes

### Faculty Fellows

Bernard G. Lindsay  
 Ian A. Smith

*Degrees Offered:* B.A., B.S., M.Astron., M.Sp.Sc., M.S.T., M.S., Ph.D.

The Department of Physics and Astronomy offers undergraduate and graduate programs for a wide range of interests. The bachelor of arts degrees in physics and in astronomy are suitable for students who wish to obtain a broad liberal education with a concentration in physical science. The bachelor of science degrees in physics, in astrophysics, and in chemical physics provide preparation for employment or further study in physics and related fields. Students in the professional, nonthesis master's programs obtain advanced training in astronomy, space science, or science teaching. Research facilities and thesis supervision are available for M.S. and Ph.D. students in atomic, molecular, and optical physics; biophysics; condensed matter and surface physics; earth systems science; nuclear and particle physics; observational astronomy; solar system physics; space plasma physics; and theoretical physics and astrophysics.

### Undergraduate Degree Requirements

For general university requirements, see Graduation Requirements (pages 16–18). Major requirements consist of a common core of basic physics and mathematics courses, with additional course work specific to each degree program. Students may obtain credit for some courses by advanced placement, and the department's Undergraduate Committee can modify requirements to meet the needs of students with special backgrounds.

#### **All physics majors must complete the following courses:**

PHYS 101 or 111 *Mechanics* (with lab)  
 PHYS 102 or 112 *Electricity and Magnetism* (with lab)  
 PHYS 201 *Waves and Optics*  
 PHYS 202 *Modern Physics*  
 PHYS 231 *Elementary Physics Laboratory II*  
 PHYS 301 *Intermediate Mechanics*  
 MATH 101/102 *Single Variable Calculus I and II*  
 MATH 211 *Ordinary Differential Equations and Linear Algebra*  
 MATH 212 *Multivariable Calculus*  
 (MATH 221/222 *Honors Calculus III and IV* may substitute for MATH 211/ MATH 212)

#### **Additional courses for the B.S. degree in physics:**

PHYS 302 *Intermediate Electrodynamics*  
 PHYS 311/312 *Introduction to Quantum Physics I and II*  
 PHYS 331/ 332 *Junior Physics Laboratory I and II*  
 PHYS 411 *Introduction to Nuclear and Particle Physics*  
 PHYS 412 *Solid-state Physics*  
 PHYS 425 *Statistical and Thermal Physics*  
 PHYS 491/492 *Undergraduate Research*

PHYS 493/494 *Undergraduate Research Seminar*

(The Undergraduate Research course and seminar must be taken concurrently)

MATH 381 *Introduction to Partial Differential Equations* and  
 MATH 382 *Complex Analysis*  
 or CAAM 335 *Matrix Analysis* and  
 CAAM 336 *Differential Equations in Science and Engineering*

CHEM 121/122 *General Chemistry*  
 (with lab)

or CHEM 151/152 *Honors Chemistry*  
 (with lab)

#### **Additional courses for the B.S. degree in physics with option in applied physics:**

PHYS 302 *Intermediate Electrodynamics*  
 or ELEC 306 *Electromagnetic Fields and Devices*

PHYS 311 *Introduction to Quantum Physics I*

PHYS 312 *Introduction to Quantum Physics II*

or ELEC 361 *Electronic Materials and Quantum Devices*

2 of PHYS 331/332 *Junior Physics Laboratory I and II*, ELEC 327 *Digital Logic Design Laboratory*, ELEC 342 *Electronic Circuits*, and ELEC 465 *Physical Electronics Practicum*

PHYS 412 *Solid-state Physics*  
 or approved substitute in applied physics  
 PHYS 425 *Statistical and Thermal Physics*  
 PHYS 491/492 *Undergraduate Research*  
 PHYS 493/494 *Undergraduate Research Seminar*  
 (The Undergraduate Research course and seminar must be taken concurrently)  
 ELEC 242 *Fundamentals of Electrical Engineering II*  
 or ELEC 243 *Introduction to Electronics*  
 ELEC 305 *Introduction to Physical Electronics*  
 MATH 381 *Introduction to Partial Differential Equations*  
 or CAAM 336 *Differential Equations in Science and Engineering*  
 CHEM 121/122 *General Chemistry with Laboratory*  
 or CHEM 151/152 *Honors Chemistry with Laboratory*

**Additional courses for the B.S. degree in physics with option in biophysics:**

PHYS 302 *Intermediate Electrodynamics*  
 PHYS 311/312 *Introduction to Quantum Physics I and II*  
 PHYS 425 *Statistical and Thermal Physics*  
 BIOS 201/202 *Introductory Biology*  
 BIOS 301 *Biochemistry*  
 CHEM 121/122 *General Chemistry with Laboratory*  
 or CHEM 151/152 *Honors Chemistry with Laboratory*  
 CHEM 211/212 *Organic Chemistry*  
 CHEM 215 *Organic Chemistry Laboratory*

**Additional courses for the B.S. degree in astrophysics:**

PHYS 302 *Intermediate Electrodynamics*  
 PHYS 311 *Introduction to Quantum Physics I*  
 PHYS 425 *Statistical and Thermal Physics*  
 ASTR 100 *Exploring the Cosmos*  
 ASTR 230 *Astronomy Laboratory*

ASTR 350/360 *Introduction to Astrophysics—Stars, Galaxies, and Cosmology*  
 1 topical group, consisting of PHYS 443 *Atmospheric Science*, PHYS 480 *Introduction to Plasma Physics*, and ASTR 470 *Solar System Physics* or ASTR 430 *Teaching Astronomy Laboratory*, ASTR 450 *Experimental Space Science*, and ELEC 361 *Electronic Materials and Quantum Devices*  
 or PHYS 312 *Introduction to Quantum Physics II*, PHYS 480 *Introduction to Plasma Physics*, and ASTR 451 *Solar and Stellar Astrophysics*)  
 PHYS 491/492 *Undergraduate Research*  
 PHYS 493/494 *Undergraduate Research Seminar*  
 (The Undergraduate Research course and seminar must be taken concurrently)  
 NSCI 230 *Computation in Natural Science*  
 or CAAM 211 *Introduction to Engineering Computation*  
 CAAM 336 *Differential Equations in Science and Engineering*  
 CHEM 121 *General Chemistry with Laboratory*

**Additional courses for the B.A. degree in physics:**

PHYS 302 *Intermediate Electrodynamics*  
 PHYS 311 *Introduction to Quantum Physics I*  
 PHYS 331 *Junior Physics Laboratory I*  
 PHYS 425 *Statistical and Thermal Physics*  
 1 additional PHYS or ASTR course (3 credit hours) at 400 level  
 NSCI 230 *Computation in Natural Science*  
 or CAAM 210 or 211 *Introduction to Engineering Computation*  
 or 1 MATH  
 or CAAM course (3 credit hours) at or above 300 level

**Additional courses for the B.A. degree in astronomy:**

PHYS 331 *Junior Physics Laboratory I*  
or NSCI 230 *Computation in Natural Science*

PHYS 425 *Statistical and Thermal Physics*

or CHEM 311 *Physical Chemistry*

ASTR 100 *Exploring the Cosmos*

ASTR 230 *Astronomy Laboratory*

ASTR 350/360 *Introduction to Astrophysics—Stars, Galaxies, and Cosmology*

ASTR 470 *Solar System Physics*

1 of: ASTR 430 *Teaching Astronomy Laboratory*, ASTR 450 *Experimental Space Science*, or PHYS 443 *Atmospheric Science*

CHEM 211 *Organic Chemistry*

CHEM 212 *Organic Chemistry*

or CHEM 360 *Inorganic Chemistry*

CHEM 311/312 *Physical Chemistry*

PHYS 302 *Intermediate Electrodynamics*

2 of: PHYS 311 or 312 *Introduction to Quantum Physics I or II*, CHEM 415 *Chemical Kinetics and Dynamics*, and CHEM 430 *Quantum Chemistry*

6 credit hours from: CHEM 215 *Organic Chemistry Laboratory*, CHEM 351, or 352 *Introductory Module in Experimental Chemistry*, CHEM 373–391, CHEM 435 *Advanced Module in Chemistry*, and PHYS 331, or 332 *Junior Physics Laboratory I or II*

6 credit hours from: NSCI 230 *Computation in Natural Science*, CAAM 210, or 211 *Introduction to Engineering Computation*, and MATH, or CAAM courses at or above 300 level

**Additional courses for the B.S. degree in chemical physics:**

CHEM 121/122 *General Chemistry with Laboratory*

or CHEM 151/152 *Honors Chemistry with Laboratory*

**Requirements for Advanced Degrees**

For general university requirements, see Graduate Degrees (pages 60–65). More detailed information on courses and requirements is available from the Department of Physics and Astronomy.

The master of astronomy and master of space science require 30 credit hours of approved course work, including at least 9 credit hours of research participation. The master of science teaching requires 30 credit hours of approved course work, which may include up to 12 hours of research participation or practicum training.

The master of science is a research degree, normally undertaken as the first stage of doctoral study. The M.S. requires at least 30 credit hours of approved graduate-level studies, including a thesis performed under the direction of a departmental faculty member.

To be eligible for the Ph.D. degree, graduate students must demonstrate to the department their ability to engage in advanced research. This is normally accomplished by successfully completing the work for the M.S. Students must also complete 60 credit hours of approved graduate-level study at Rice and produce a research thesis under the direction of a departmental faculty member. At least two years of graduate study are required for the Ph.D.

**See ASTR (pages 265–267), and PHYS (pages 490–494) in the Courses of Instruction section.**

# Policy Studies

## The School of Social Sciences

### Director

Donald Ostdiek

*Degree Offered: B.A.*

This interdisciplinary major focuses on policy issues that are of public interest. Students in policy studies evaluate and analyze both the determinants and the effects of policy decisions, gaining an understanding of the policy-making process and acquiring an intellectual base for policy-making skills. The course of study addresses theoretical issues as well as applied and prescriptive policy questions.

Students may take policy studies *only as a second major*. It complements majors in any university department. For instance, engineering or science majors who are contemplating careers in business or government can investigate how technical innovations or regulations are adopted and implemented as matters of public policy, and humanities majors can explore career options where language skills are particularly valuable.

Students are encouraged to investigate research opportunities with Rice faculty. Students may also elect to participate in the Washington Semester Program at American University, which includes both course work and an internship within the federal government. See the policy studies director for more information.

### Degree Requirements for B.A. in Policy Studies

For general university requirements, see Graduation Requirements (pages 16–18). Students may take the policy studies major only as a second major (their first major cannot also be in an interdepartmental program). The major contains 11 courses divided into the following elements: a basic curriculum, an area curriculum, and a research requirement.

The policy studies **basic curriculum** introduces students to the basic concepts and tools needed to understand and study policy, regardless of the policy area they choose to focus on. The four courses ensure that all policy studies majors have a common professional vocabulary and conceptual frame of reference. The policy studies **area curriculum** provides specialized training that builds on students' work in the basic curriculum.

Students are required to take 6 courses from one of the following areas of specialization:

- Environmental policy
- Government policy and management
- Healthcare management
- International affairs
- Law and justice
- Business policy and management
- Urban and social change

Policy studies students must also engage in a **research project** in their area of interest. In consultation with the policy studies director, each student must select a research seminar or complete an approved research project through independent study or other credit. The Policy Studies Research Seminar (SOSC 400) also counts for this requirement.

**4 Basic Curriculum Courses**

- POLI 338/SOSC 301 *Policy Analysis*  
 ECON 211 or 212 *Principles of Economics I or II*  
 POLI 337 *Public Policy and Bureaucracy* or SOSC 300 *Social Science and Public Policy* or POLI 436 *Politics of Regulation*  
 1 advanced analysis or methods course approved by the policy studies director

**6 Area Curriculum Courses**

**6 courses from one of the following seven groups:**

**Core Courses (Choose at least 3)**

**1. Environmental Policy**

- ECON 480 *Environmental and Energy Economics I*  
 POLI 331 *Environmental Politics and Policy*  
 SOCI 367 *Environmental Sociology*  
 ENVI 306 *Global Environmental Law and Sustainable Development*  
 ENVI 406 *Introduction to Environmental Law*  
 HIST 330 *U.S. Environmental History*

**Electives (Choose up to 3)**

- ARCH 313 *Sustainable Architecture*  
 ANTH 468 *Palaeoclimate and Human Response*  
 BIOS 322 *Global Ecosystem Dynamics*  
 BIOS 324 *Wetland Ecosystems*  
 BIOS 325 *Ecology*  
 ENGL 478 *Literature and the Environment*  
 ENVI/HPHS 201 *Introduction to Environmental Systems*  
 ENVI 445 *Natural Environmental Factors*  
 GEOL 326 *Environmental Geology*  
 GEOL 341 *The Oceans*  
 GEOL 345 *Geology of National Parks*  
 POLI 336 *Politics of Regulation*  
 RELI 362 *Environmental Ethics*  
 SPAC 203 *Atmosphere, Weather, and Climate*  
 SPAC 443/ENVI 443 *Atmospheric Science*  
 UNIV 303 *Environmental Problem Solving*

**2. Government Policy and Management**

- ECON 436 *Government Regulation of Business*  
 ECON 461 *Urban Economics*  
 ECON 483 *Public Finance*  
 POLI 300 *Federalism and Intergovernmental Politics*  
 POLI 301 *State Politics*  
 POLI 332/432 *Urban Politics*  
 POLI 436 *Politics of Regulation*  
 ANTH 344 *City/Culture*  
 ECON 438 *Economics of the Law*  
 ECON 480 *Environmental and Energy Economics I*  
 HIST 337 *Gender and Politics in the West*  
 POLI 330 *Minority Politics*  
 POLI 331 *Environmental Politics and Policy*  
 POLI 335 *Political Environment of Business*  
 POLI 458 *Property Rights and Privatization*  
 ENVI 406 *Introduction to Environmental Law*  
 HIST 468 *Women and the Welfare State*  
 SOSC 330 *Healthcare Reform in the 50 States*  
 SOSC 430 *The Shaping of Health Policy in the United States*  
 SOCI 308 *Houston: The Sociology of a City*  
 SOCI 331 *Politics and Society in Texas*  
 SOCI 370 *Sociology of Education*  
 SOCI 350 *Sociological Approaches to Poverty*  
 SOCI 399 *Immigration and Public Health*  
 SOCI 411 *Social Change*  
 SOCI 441 *Minorities in the Schooling Process*

**3. Healthcare Policy and Management (Choose 6)**

- ANTH 381 *Medical Anthropology*  
 ANTH 386 *Human Nutrition*  
 ANTH 388 *Life Cycle: A Biocultural View*  
 HEAL 212 *Consumer Health*  
 HEAL 350 *Understanding Cancer*  
 HEAL 407 *Epidemiology*  
 HEAL 410 *Program Development in Health Education*  
 PHIL 315 *Ethics, Medicine, and Public Policy*  
 RELI 462/463 *Medical Ethics and American Values I and II*

SOSC 330 *Healthcare Reform in the 50 States*  
 SOSC 420 *Healthcare: Competition and Managed Care*  
 SOSC 430 *The Shaping of Health Policy in the United States*  
 SOCI 334 *Sociology of the Family*  
 SOCI 345 *Sociology of Medicine*  
 SOCI 399 *Immigration and Public Health*  
 SOCI 433 *Sociology of the Life Cycle: Death and Dying*  
 SPAN 307/308 *The Language of Healthcare*

**Core Courses (Choose at least 2)**

**4. International Affairs**

ECON 420 *International Economics*  
 POLI 372 *American Foreign Policy*  
 POLI 376 *International Political Economy*  
 POLI 378 *The Politics of American National Security Policy*  
 POLI 462 *Comparative Public Policy*

**Electives (Choose up to 4)**

ANTH 360 *Modernity and Social Space*  
 ECON 421 *International Finance*  
 ECON 430 *Comparative Economic Systems*  
 ECON 451 *Political Economy of Latin America*  
 HIST 232 *The Making of Modern Africa*  
 HIST 353 *The Cold War*  
 HIST 394 *War in the Modern World*  
 HIST 464 *Foreign Policy of Nixon and Kissinger*  
 HIST 469 *US–Latin America Relation*  
 POLI 354 *Latin American Politics*  
 POLI 355 *Government and Politics of the Middle East*  
 POLI 356 *Politics of Latin American Economic Development*  
 POLI 360 *West European Democracies*  
 POLI 361 *Comparative Post-Communist Systems*  
 POLI 373 *International Conflict*  
 POLI 376 *International Political Economy*  
 POLI 464 *Political Economy of Development*

**5. Law and Justice (Choose 6)**

ANTH 326 *Anthropology of Law*  
 ANTH 419 *Law and Society*  
 ECON 438/439 *Economics of the Law I and II*  
 ENVI 406 *Introduction to Environmental Law*  
 HIST 297/298 *American Legal History I and II*  
 PHIL 307 *Social and Political Philosophy*  
 PHIL 316 *Philosophy of Law*  
 POLI 321 *American Constitutional Law*  
 POLI 458 *Property Rights and Privatization*  
 SOCI 321 *Criminology*

**Core Courses (Choose at least 3)**

**6. Business Policy and Management**

ECON 436 *Government Regulation of Business*  
 ECON 445 *Managerial Economics*  
 ECON 435 *Industrial Organization*  
 POLI 335 *Political Environment of Business*  
 POLI 336 *Politics of Regulation*  
 PSYC 231 *Industrial and Organizational Psychology*

**Electives (Choose up to 3)**

ACCO 305 *Introduction to Accounting*  
 ECON 355 *Money and Banking*  
 ECON 370 *Microeconomic Theory*  
 ECON 375 *Macroeconomic Theory*  
 ECON 415 *Human Resources, Wages, and Welfare*  
 ECON 420 *International Economics*  
 ECON 421 *International Finance*  
 ECON 448 *Corporation Finance*  
 HIST 331 *Labor in America*  
 POLI 376 *International Political Economy*  
 POLI 458 *Property Rights and Privatization*  
 POLI 464 *Political Economy of Development*



**7. Urban and Social Change**

ANTH 344 *City/Culture*  
ANTH 360 *Modernity and Social Space*  
ARCH 311 *Houston Architecture*  
ARCH 313 *Sustainable Architecture*  
ARCH 321 *Economics of the Built Environment*  
ARCH 346 *19th- and 20th-Century Architectural History*  
ARCH 351 *Social Issues and Architecture*  
ARCH 455 *Housing and Urban Programs*  
ECON 461 *Urban Economics*  
ECON 480 *Environmental Economics*  
HIST 377 *The Ancient City*

HIST 429 *Technologies of Nationalism*  
HART 325 *Art and Architecture in the Middle East*  
PHIL 307 *Social and Political Philosophy*  
SOC 301 *Social Inequality*  
SOC 308 *Houston: The Sociology of a City*  
SOC 309 *Race and Ethnic Relations*  
SOC 310 *Urban Sociology*  
SOC 313 *Demography*  
SOC 411 *Social Change*  
POL 332 *Urban Politics*  
POL 438 *Race and Public Policy*  
POL 441 *Common Property Resources*

# Political Science

## The School of Social Sciences

### Chair

T. Clifton Morgan

### Professors

John S. Ambler  
 Earl Black  
 Paul Brace  
 Gilbert Morris Cuthbertson  
 Chandler Davidson  
 Keith Edward Hamm  
 William P. Hobby  
 Robert M. Stein  
 Richard J. Stoll  
 Rick K. Wilson

### Professor Emeritus

Fred R. von der Mehden

### Associate Professor

John R. Alford

### Assistant Professors

Regina P. Branton  
 David S. Brown  
 Debra Javeline  
 Brett Ashley Leeds  
 Randolph T. Stevenson

### Lecturer

C. M. Hudspeth

*Degrees Offered:* B.A., M.A., Ph.D.

Students majoring in political science are encouraged to achieve both a broad understanding of the field and a specialized knowledge of one or more aspects of political science, including American and comparative politics, international relations (see also majors in managerial studies and public policy). Graduate study is grounded in the areas of American government (public policy, Congress, and intergovernmental relations), comparative government (Western Europe, Latin America, and political development), and international relations (international conflict).

### Degree Requirements for B.A. in Political Science

For general university requirements, see Graduation Requirements (pages 16–18). Students majoring in political science must complete 30 semester hours (10 courses) in the field of political science, plus 6 hours (2 courses) of upper-level work in any of the following fields: anthropology, economics, history, philosophy, psychology, or sociology. Students select these upper-level courses in consultation with the department adviser.

**For students who entered Rice in fall 1999 and thereafter, political science degree requirements are as follows:**

- At least 1 course in each of the following fields: American government, comparative politics, international relations, theory, and methods. The Political Science Department Courses of Instruction listing (pages 494–503) indicates the field for each department offering. “A” indicates the course is in American government, “C” indicates the course is in comparative government, “I” indicates the course is in international relations, and “T” indicates the course is in theory and methods.

- At least 2 of the 4 introductory courses
- A concentration of at least 4 courses in one of the following fields: American government, comparative politics, international relations. These 4 courses must include the introductory course and a seminar.
- A statistics course offered by the Department of Political Science
- 2 seminars, at the 400 or 500 level, with different instructors

**Students who entered Rice before fall 1999 may choose to satisfy the above requirements, or they may satisfy requirements in force at the time of their enrollment at Rice, which usually will be as follows:**

- At least 1 course in any four of the following areas: American political institutions and behavior, comparative politics, international relations, political philosophy and legal theory, empirical theory and method, and American public policy
- 2 seminars, at the 400 or 500 level, with different instructors

Double majors in one of the related disciplines named above may automatically substitute 6 hours (2 courses) in upper-level studies (at the 300 level or above) from their second field for 6 of the required 30 hours of political science courses. Double majors whose second major is managerial studies or policy studies may automatically substitute 3 hours (1 course). Double majors whose second major is in a field other than those listed above normally must take the full 30 hours (10 courses) in political science. They may petition to substitute a course from another field for a political science course, but this is permitted only when the course to be substituted has a significant relationship to political science. Note: The reduction of political science course requirements for double majors is eliminated for students who entered in and after fall 1999.

**Introductory Courses.** POLI 209 Introduction to Constitutionalism and Modern Political Thought, POLI 210 American Government and Politics, POLI 211 International Relations, and POLI 212 Introduction to Comparative Politics constitute the introductory courses in political science. **Students entering in the Fall of 1999 and after must take at least 2 of these, including the 1 in the field of specialization.** Students should note, however, that POLI 210 is the course that meets the Texas state licensing requirements in political science for teachers. Students who entered Rice before fall 1999 and choose to stay with the old plan may count no more than 2 of the introductory courses toward their major requirements.

**Directed Readings Courses.** Directed readings courses are intended for students who have completed a substantial number of political science courses and who seek to explore a subject not covered in regular courses. They are available only if an appropriate faculty member agrees to supervise. The faculty member supervising a directed readings course must have a full-time appointment, and a student may not take more than 1 readings course from him or her. Students should submit a brief, one-page description of the work to be conducted in the readings course (including the name of the faculty supervisor) to the department director of undergraduate studies no later than two weeks into the semester in which they intend to take the course. Readings courses do not count toward the department's distribution requirement.

**Honors Program.** Admission to the honors program requires the approval of the department director of undergraduate studies. During the first semester of the two-semester program, students take a readings course that provides them with a basis for drawing up a thesis prospectus. At the end of the first semester, a thesis committee composed of two full-time members of the political science department reviews and approves the prospectus.

During the second semester, students write their honors thesis, which also must meet with committee approval. Students may not combine the 2 honors courses into one semester. Those who successfully complete the honors program may substitute it for one of the seminars required for the major. See also Honors Programs (page 33).

### **Degree Requirements for M.A. and Ph.D. in Political Science**

For general university requirements, see Graduate Degrees (pages 60–65). Students in the Ph.D. program must complete 48 semester hours in advanced courses or seminars prior to candidacy and conclude the degree program with the oral presentation of a dissertation displaying original research. Normally, students take the specified core courses in the three general fields of American government, comparative government, and international relations, completing additional course work and comprehensive examinations in two of those three fields. Before taking the comprehensive examinations, students must:

- Complete courses in statistical analysis
- Demonstrate some familiarity with traditional political theory
- Satisfy the language or skill requirement in their major field
- Complete all course requirements

Students select specific courses for graduate study in consultation with the faculty adviser.

The master of arts degree can be obtained with 36 semester hours of course work, all of which must be taken at the graduate level (400 level or above), and the completion of 2 research papers in seminars taken over the course of study. A minimum G.P.A. of 3.0 is required for awarding the M.A.

The political science department requires that not more than three years elapse between the time the student is admitted to graduate study and the completion of the M.A. degree, unless an extension is approved by the department graduate committee.

**See POLI (pages 494–503) in the Courses of Instruction section.**

# Psychology

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## The School of Social Sciences

### Chair

Robert L. Dipboye

### Professors

Richard Bagozzi  
 Jennifer George  
 Kenneth R. Laughery  
 Randi C. Martin  
 H. Albert Napier  
 Daniel Osherson  
 James Pomerantz  
 David J. Schneider  
 Ronald N. Taylor  
 Michael J. Watkins

### Professor Emeritus

John Brelsford

### Associate Professors

Richard R. Batsell  
 Sarah A. Burnett  
 Steven C. Currall  
 David M. Lane  
 Miguel A. Quiñones

### Assistant Professors

Lyle Brenner  
 Michael Byrne  
 Mikki Hebl  
 Geoff Potts  
 Tony Ro

### Adjunct Professors

John H. Byrne  
 J. Maxwell Elden  
 William C. Howell  
 Susan Jerger  
 Katherine A. Loveland  
 John E. Overall  
 Anthony A. Wright

### Adjunct Associate Professors

Jocelyne Bachevalier  
 Lindley E. Doran  
 Deborah A. Pearson  
 Kevin C. Wooten

### Adjunct Assistant Professors

Janice Bordeaux  
 Betty S. Sanders  
 Vicki V. Vandaveer  
 Heidi Ziemer

### Adjunct Instructors

Robert M. Diddel  
 Heidi Schweingruber  
 Mihriban Whitmore

*Degrees Offered: B.A., M.A., Ph.D.*

The undergraduate program offers the core preparation recommended by the nation's leading graduate schools of psychology, with advanced courses and research opportunities to fit individual needs. Programs of study may be structured around prospective careers in medicine, law, business, and education. Program emphasis in graduate study is on doctoral training, which requires course work in memory, cognition, engineering and industrial/organizational psychology, social psychology, and methodology. Faculty research interests include cognitive psychology (human memory, psycholinguistics, and information processing), cognitive neuropsychology (memory and language disorders), human factors (safety and reliability, risks and warnings, and human-computer interaction), and industrial/organizational psychology (personnel selection, training, work motivation, and group processes).

## Degree Requirements for B.A. in Psychology

For general university requirements, see Graduation Requirements (pages 16–18). Students majoring in psychology must complete 29 semester hours in departmental courses, including the following required courses.

### Core Courses

PSYC 101 *Introduction to Psychology*

PSYC 202 *Introduction to Social Psychology*

PSYC 203 *Introduction to Cognitive Psychology*

PSYC 339 *Statistical Methods—Psychology*

PSYC 340 *Research Methods*  
(no substitutions or transfer credits allowed for PSYC 339 or 340)

### At least 1 course from each block

#### Block 1

PSYC 308 *Memory*

PSYC 309 *Psychology of Language*

PSYC 350 *Psychology of Learning*

PSYC 351 *Psychology of Perception*

PSYC 360 *Thinking*

PSYC 362 *Biopsychology*

#### Block 2

PSYC 329 *Psychological Testing*

PSYC 330 *Personality Theory*

PSYC 331 *The Psychology of Gender*

PSYC 332 *Abnormal Behavior*

PSYC 460 *The Psychology of Motivation*

**Honors Program.** Qualified students may apply to the honors program during preregistration in the spring semester of their junior year. A written proposal for the project must be submitted by the end of the second week of classes in fall of the senior year, and the faculty will decide on final admission to the honors program by the end of the fourth week of classes. Admission to the honors program requires a psychology GPA of 3.5 and an overall GPA of 3.3, completion of PSYC 339, and completion or concurrent enrollment in PSYC 340. To graduate with departmental honors, students must complete the requirements for the psychology major, a written honors thesis approved by a faculty committee, and other requirements as determined by their honors committee (see Honors Program, page 32). Detailed information about the honors program is available from the instructor of the course or the departmental office.

## Degree Requirements for M.A. and Ph.D. in Psychology

For general university requirements, see Graduate Degrees (pages 60–65). For both M.A. and Ph.D. degrees, students must complete a research thesis, including its public oral defense, and accumulate 60 semester hours for the Ph.D. and 30 hours for the M.A. Course work includes required courses in certain areas, plus whatever offerings are available in the student's specialty area, either cognitive/experimental, industrial/organizational/social, or engineering psychology. While competence in a foreign language is not required, students must complete an admission-to-candidacy procedure that should establish their expertise in their chosen specialty.

**See PSYC (pages 504–510) in the Courses of Instruction section.**

# Religious Studies

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## The School of Humanities

### Chair

William B. Parsons

### Professors

Werner H. Kelber

Anne C. Klein

John M. Stroup

Edith Wyschogrod

### Assistant Professors

Elias K. Bongmba

David Cook

Matthias Henze

Gregory Kaplan

### Adjunct Professor

Stanley J. Reiser

### Adjunct Associate Professor

Elizabeth Heitman

### Adjunct Assistant Professor

Hugh W. Sanborn

*Degrees Offered:* B.A., M.A., Ph.D.

The undergraduate major includes courses in methodology (textual, historical, normative, and sociocultural approaches to the study of religion) and religious traditions (African religions, Buddhism, Christianity, comparative religions, Islam, and Judaism). The graduate program offers research degrees in 10 fields (see below). Within these clearly defined fields, students acquire a broad knowledge of religious studies with enough flexibility for interdisciplinary pursuits.

The Department of Religious Studies, in cooperation with the University of Texas Health Science Center, also offers a **Ph.D. in biomedical ethics** for students seeking to combine a rigorous training in religious studies (particularly theoretical approaches to ethics) with an interest in clinical and policy issues related to health care. The focus on health care distinguishes the program from those that concentrate more exclusively on moral philosophy or clinical ethics. Both the academic track and the professional track enable students to develop skills in interpreting religious/cultural texts and practices while engaging with theoretical and concrete issues in ethics, and the second track also prepares students to exercise clinical judgment, interpret cases, and engage in clinical research.

### Degree Requirements for B.A. in Religious Studies

For general university requirements, see Graduation Requirements (pages 16–18). Students majoring or double-majoring in religious studies must complete:

- 30 semester hours (10 courses), or 24 semester hours (8 courses) for double majors
- 24 hours (8 courses) at 200, 300 or 400 level, or 18 hours (6 courses) for double majors

All majors must take:

- RELI 101 *Introduction to Religion* in the first or second year
- 2 introductory courses in religious traditions (1 western, 1 non-western)

Honors students will participate in a senior seminar and write an honors thesis.

In addition, students must also satisfy the distribution requirements and complete no fewer than 60 semester hours outside the departmental requirements for a program totaling at least 120 semester hours. See Distribution Requirements (page 17) and Majors (pages 19–20).

### **Degree Requirements for M.A. and Ph.D. in Religious Studies**

The graduate program accepts a limited number of qualified students. A distinguished undergraduate record and high scores on the Graduate Record Examination (GRE) are essential and, for Ph.D. applicants, an advanced degree in the humanities is desirable. For general university requirements, see Graduate Degrees (pages 60–65). Students admitted into the program will normally receive financial assistance in the form of a tuition waiver and a stipend. As part of their training and in return for their stipends, students in their second year and beyond are expected to serve as research assistants or teaching assistants. Students receiving stipends may also be asked on occasion to assist the department in other ways.

The M.A. in religious studies is normally a two-year program. Requirements are as follows:

- A total of 12 courses, including
  - 8 courses in 4 fields of religious studies (see list of fields below)
  - 2 department seminars
  - 2 independent research courses for preparation of comprehensive papers or thesis
- A passing grade on a reading examination in a foreign language (either a language of scripture or commentary in a tradition or a language of scholarship)
- Satisfactory completion of 2 comprehensive papers (demonstrating a grasp of a subdiscipline or topic that goes well beyond what is expected of a term paper) or a thesis

The Ph.D. in religious studies is normally a five-year program. Requirements are as follows:

- 18 Courses (54 hours required):
  - 6 courses in the major field
  - 3 courses in each of two minor fields (see list of fields below)
  - 2 department seminars (one or more of which may count as a major or minor course) to be taken in each of the first two years
  - 4 to 6 elective courses chosen in consultation with the student's adviser
 Courses in the department's M.A. program (including the department seminars) count for credit toward the Ph.D.
- Passing grades on reading examinations in 1 foreign languages, at least 1 of which must be a language of scholarship in the student's chosen field
- Passing grades in 5 qualifying examinations: 3 in the student's major field, 1 in each of the students 2 minor fields. (In place of examinations, the relevant faculty member may, in consultation with the student, substitute papers that demonstrate a thorough grasp of the field.) The nature and content of the examinations or papers will be determined one year prior to the date the student expects to write them, which is ordinarily the end of the third or beginning of the fourth year in the program.
- Oral discussion of dissertation proposal
- Satisfactory completion of dissertation and oral defense



**Reading Lists.** Students should become broadly familiar with the literature of their majors and minors; reading lists will be provided. Students are expected to familiarize themselves with this material such that they draw on it on their exams and the dissertation itself. The graduate seminar (see below) is, in part, an introduction to areas of the reading list and to the techniques for engaging in deep, independent reading.

**Fields of Study.** Religion and contemporary cultures, scriptural interpretation, ethics and philosophy of religion, mysticism, psychology, and religious practices are fields of study in this program. These fields will include courses covering one or more of the following traditions: African and African-based religions, Buddhism, Christianity, Judaism, and new and alternative religions. Ph.D. students may concentrate in one or more of these traditions in the context of their major and minor fields.

Students interested in a major or minor in biomedical ethics may take it as a concentration in ethics and philosophy of religion or as part of the Rice–University of Texas joint Ph.D. program in biomedical ethics, described below.

### **Professional Development**

Opportunities may be available for Ph.D. candidates to teach undergraduate courses in the department. Opportunities to teach courses in local colleges and universities may also arise. Limited funds are also available for Ph.D. students to attend conferences to present their research. The department encourages these and other efforts to prepare students for academic careers.

### **Rice–University of Texas Joint Ph.D. Program in Biomedical Ethics**

This program offers students opportunities for research and/or internships in clinical ethics at the University of Texas Health Science Center across from the Rice campus. It is especially appropriate for students seeking a career in a clinical or policy setting. The requirements are the same as those for the Ph.D. program as described above, except that the student will be required to take 7 courses in the major field, 2 of which will be in clinical ethics or health policy. In addition, one of the student's major exams will focus on issues of relevance for clinical ethics and/or healthcare policy.

**See RELI (pages 510–521) in the Courses of Instruction section.**

# Sociology

## The School of Social Sciences

### Chair

Chandler Davidson

### Professors

Stephen L. Klineberg  
William Martin

### Associate Professors

Katharine Donato  
Michael Emerson  
Elizabeth Long

*Degree Offered: B.A.*

This undergraduate major fosters an analytic approach to the study of human societies, whether as a preparation for graduate work in sociology and related fields, or as the foundation for a variety of occupations. It is also an important component of a liberal arts education and as such, can serve as effective preparation for professions such as law or medicine. The program provides students with considerable latitude in pursuing personal interests while ensuring familiarity with basic theoretical approaches and research methods.

### Degree Requirements for the B.A. in Sociology

For general university requirements, see Graduation Requirements (pages 16–18). Students majoring in sociology must complete at least 33 semester hours (11 courses) in sociology. Requirements for the major normally include the following.

SOCI 203 *Introduction to Sociology*  
SOCI 398 *Social Statistics*

***1 of the following courses:***  
SOCI 390 *Research Methods*  
SOCI 421 *Craft of Sociology*

***At least 1 theory course, such as:***  
SOCI 317 *Contemporary Sociological Theory*  
SOCI 395 *Feminist Social Thought*

**Any other sociology courses (for a total of 11 in all).** See course listings and check for availability.

Sociology majors do not need to take a foreign language, but those planning graduate study should be competent in at least one such language. Some sociology courses listed in the Courses of Instruction section may not be offered every year, and courses among the regular offerings are occasionally added or dropped. Students are responsible for making sure they satisfy all the requirements for their degree. One of the sociology faculty, preferably department adviser Professor Long, should sign each major's registration.

**Honors Program.** For general information, see Honors Programs (page 33). Students who have maintained an A- average in at least 4 sociology courses beyond the introductory level may apply to enter the honors program. They should submit their research proposals either a) by November 15 of the first semester of their junior year, in which case they will research and write their thesis during the second semester of their

junior year and the first semester of their senior year; or b) by March 15 of the second semester of their junior year, in which case they will complete their thesis during the two semesters of their senior year. (Since departmental awards for seniors are usually determined around March 1, and the honors thesis is often taken into consideration in this determination, students who wish to be considered for these awards are advised to begin their thesis in the spring of their junior year.) Research proposals must be carefully thought out and discussed with at least one professor before being submitted. Once submitted, they will be considered by the department faculty as a whole and, if acceptable, the student will be assigned a faculty adviser.

Students in the honors program register for two successive semesters in Directed Honors Research (SOC 492, 493). The first of the 2 courses is typically devoted to a thorough review of the relevant literature, the formulation of hypotheses growing out of the literature review, and a proposal consisting of a research design that clearly describes how the data are to be collected and analyzed. To receive a grade for the first semester, the student must submit to the primary thesis adviser by the last day of classes a paper containing the literature review, hypotheses, and research design, along with a bibliography. The research itself is usually carried out in the second semester (and sometimes in the summer following the junior year) and is analyzed, written up, and defended as a completed Honors Thesis during that semester.

All honors students should complete SOC 390 Research Methods or SOC 421 The Craft of Sociology before beginning the second semester of the program. If their project requires statistical analysis, students should also complete SOC 398 Social Statistics before beginning the second semester of their research.

**See SOC (pages 525–528) in the Courses of Instruction section.**

# Statistics

## The George R. Brown School of Engineering

### Chair

Katherine B. Ensor

#### Professors

Bryan W. Brown  
 Dennis Cox  
 Mahmoud El-Gamal  
 Don H. Johnson  
 Marek Kimmel  
 Javier Rojo  
 David W. Scott  
 Robin Sickles  
 James R. Thompson  
 Edward E. Williams  
 Rick K. Wilson

#### Professors Emeriti

John W. Brelsford  
 Paul Pfeiffer

#### Associate Professors

Rudy Guerra  
 David M. Lane

#### Assistant Professor

Quintus Jett

#### Adjunct Professors

E. Neely Atkinson  
 Donald A. Berry  
 Barry W. Brown  
 Ranajit Chakraborty  
 Thomas D. Downs  
 Ralph F. Frankowski  
 Richard Heydorn  
 Dennis A. Johnston  
 Gary Rosner  
 Howard D. Thames, Jr.  
 Robert A. White  
 Stuart Zimmerman

#### Adjunct Associate Professors

Joaquin Diaz-Saiz  
 Kim-Anh Do  
 Carl S. Hacker  
 Kenneth Hess

#### Lecturers

L. Scott Baggett  
 Peter Olofsson  
 Michael Pearlman

*Degrees Offered:* B.A., M.Stat., M.A., Ph.D.

Course work in statistics acquaints students with the role played in the modern world by probabilistic and statistical ideas and methods. Students grow familiar with both the theory and the applications of techniques in common use as they are trained in statistical research. The flexibility of the undergraduate program allows students to concentrate on theoretical or applied training, or they may link their studies in statistics to work in other related departments (see majors in economics, education, electrical and computer engineering, computational and applied mathematics, managerial studies, political science, and psychology). Graduate study has concentrations in applied probability, bioinformatics, biomathematics, biostatistics, computational finance, data analysis, density estimation, epidemiology, image processing, model building, quality control, statistical computing, spatical processes, stochastic processes, and time series analysis. A joint M.B.A./master of engineering degree is also available in conjunction with the Jesse H. Jones Graduate School of Management.

### Degree Requirements for B.A. in Statistics

For general university requirements, see Graduation Requirements (pages 16–18). Students majoring in statistics normally complete the following:

- MATH 101/102 *Single Variable Calculus I and II*
- MATH 211 *Ordinary Differential Equations and Linear Algebra*
- CAAM 210 or 211 *Introduction to Engineering Computation*
- STAT 300 *Model Building*
- STAT 310 *Probability and Statistics*
- STAT 410 *Introduction to Statistical Computing and Regression*
- 5 elective courses from the statistics department (or other departments with approval from their adviser) at the 300 level or higher

Mathematically oriented students should also take MATH 212 *Multivariable Calculus* and MATH 355 *Linear Algebra* (or CAAM 335 *Matrix Analysis*).

### Degree Requirements for M.Stat., M.A., and Ph.D. in Statistics

For general university requirements, see Graduate Degrees (pages 60–65). Admissions applications should include scores on the Graduate Record Examination (GRE) in the quantitative, verbal, and analytical tests. Financial support is available for well-qualified doctoral students. Course work for all degree programs should be at the 400 level or above, although 2 approved 300-level courses may be accepted.

**Master's Programs.** Candidates for the nonthesis **M.Stat.** degree must complete 30 semester hours of approved course work. Candidates for the **M.A.** degree in statistics must complete 30 semester hours of approved course work as well as one of the following: (1) complete an original thesis and defend it in a public oral examination; or (2) perform satisfactorily on the second-year Ph.D. comprehensive examinations.

**Ph.D. Program.** Candidates for the Ph.D. degree in statistics must:

- Complete at least 90 semester hours of approved course work beyond the bachelor's degree and a minimum of 60 hours beyond a master's degree
- Perform satisfactorily on preliminary and qualifying examinations
- Complete an original thesis with a public oral defense

See STAT (pages 537–541) in the Courses of Instruction section.

## University Courses

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University courses provide opportunities for dialogue across disciplinary and departmental boundaries. They are an experiment in curriculum development, directed toward students interested in interdisciplinary subjects beyond their elected major. Students, however, may not use these courses to satisfy their university distribution requirements.

**See UNIV (page 543–545) in the Courses of Instruction section.**

## The Program for the Study of Women and Gender

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### Director and Adviser

Helena Michie

#### Professors

Jane Chance

Marcia J. Citron

Margret Eifler

Lynne Huffer

Anne C. Klein

Susan Keech McIntosh

Helena Michie

Deborah Nelson-Campbell

Daniel J. Sherman

Meredith Skura

Ewa M. Thompson

Susan Wood

#### Associate Professors

José F. Aranda, Jr.

Peter C. Caldwell

Scott S. Derrick

James D. Faubion

Eugenia Georges

Deborah A. Harter

Lucille P. Fultz

Colleen R. Lamos

Caroline F. Levander

Elizabeth Long

Susan Lurie

Honey Meconi

Carol E. Quillen

Paula Sanders

Julie M. Taylor

#### Assistant Professors

Regina Branton

Krista Comer

Sarah Ellenzweig

Michelle R. Hebl

Betty Joseph

Rafael M. Mérida-Jiménez

Nancy A. Niedzielski

Nanxiu Qian

Sherrilyn Roush

Allison Sneider

#### Lecturer

Thad Logan

### *Degrees Offered: B.A.*

This undergraduate major takes an interdisciplinary approach in its exploration of women's experiences and the role that ideas about sexual differences have played in human societies. Areas of inquiry include women's participation in social and cultural production; the construction of gender roles and sexuality; the relationship between ideas about gender and concepts inherent in other social, political, and legal structures; and the implications of feminist theory for philosophical and epistemological traditions. Students acquire an understanding of how adopting gender as a significant category of analysis challenges existing disciplines. They also gain proficiency in the methods used to study and compare cultural constructions of gender and sexuality, and they become familiar with the ongoing fundamental debates in women's and gender studies.

### **Degree Requirements for B.A. in the Study of Women and Gender**

For general university requirements, see Graduation Requirements on (pages 16–18). Students majoring in the study of women and gender must complete:

- 36 semester hours of departmental course work (30 hours if this is a second major)
- WGST 101 *Introduction to the Study of Women and Gender*
- 1 capstone course
- At least 1 approved comparative course
- At least 1 approved theory course

Of the 8 remaining required courses, no more than 4 courses may be from a single department. All students must work out their individual courses of study with their faculty advisers. Each student's course of study must be approved by the director of the major.

**For a current list of courses offered in fall 2001/spring 2002, please visit the SWG web site at <http://www.ruf.rice.edu/~swg>.**

**NOTE:** Courses listed with an asterisk (\*) after the course number will be offered during the 2001-2002 academic year.

The following courses are among those that can be used to fulfill requirements for the major. As course offerings may vary from year to year, students are urged to consult with their faculty advisers or with the director at the beginning of each semester.

***Courses that satisfy the  
Core Requirements***

- WGST 101\* *Introduction to the Study of Women and Gender*  
WGST 201 *Introduction to Lesbian, Gay, Bisexual, and Transgender Studies*  
WGST 499\* *Capstone: Independent Research in the Study of Women and Gender*

***Courses that satisfy the Comparative or Cross-cultural Requirement***

- WGST 225\* *Women in Greece and Rome*  
WGST 283\* *Women in the Islamic World*  
WGST 299 *Women in Chinese Literature*  
WGST 328 *Latin American Genders*  
WGST 350 *Gender and Symbolism*  
WGST 352 *Feminism and Nationalism*  
WGST 354 *Survey: Chicano/a Poetry*  
WGST 357 *Buddhism and the Female*  
WGST 358 *Women Filmmakers: A 20th-Century Retrospective*  
WGST 361 *New German Cinema*  
WGST 362\* *Women and Visual Culture in Islamic Societies*  
WGST 391\* *Hispanic Women Writers*  
WGST 399 *Women in Chinese Literature* (enriched version)  
WGST 426 *Women and Gender in Medieval Iberia*  
WGST 442 *Women in Russian Literature*  
WGST 453\* *Topics in African American Literature*  
WGST 454 *German Women Authors*  
WGST 455 *Women and Gender in Islamic Societies*  
WGST 458 *Buddhist Meditation Theory: Women and Men*  
WGST 491\* *Feminism and Nationalism* (enriched version)

***Courses that satisfy the  
Theory Requirement***

- WGST 407 *Introduction to Feminist Literary Theory and Criticism*  
WGST 430\* *Studies in Literary Theory: Queer Theory*  
WGST 434 *French Feminist Theory*  
WGST 456 *Developments in French Feminist Theory*  
WGST 460\* *Feminist Social Thought*  
WGST 480\* *Feminist Literary Theory: Feminist Film Theory*  
WGST 481\* *Literary Theory: What's Left of Literary Theory?*  
WGST 482 *Problems in Contemporary Feminist Theory*

***Other Courses***

- WGST 214 *Introduction to Women's History*  
WGST 220\* *Gendered Perspectives on the Law*  
WGST 232\* *Engendering American Democracy: The History of the Right to Vote*  
WGST 233 *The Female Body in Contemporary Culture*  
WGST 234\* *History of American Women I: Colonial Beginnings to the Civil War*  
WGST 235\* *History of American Women II: Civil War to the Present*  
WGST 237\* *Gender and Politics in European History*  
WGST 300\* *Medieval Literature: Medieval Women Writers*  
WGST 301 *Arthurian Literature*  
WGST 305 *Chaucer and the Subversive Other: Women, Gender, Nation, Class*



- WGST 310 *Problems in Literary History*
- WGST 311 *Society and the Sexes in Modern France*
- WGST 312 *Survey of Old English Literature: Gender and Power in Old English*
- WGST 314 *Introduction to Women's History* (enriched version)
- WGST 324\* *Sociology of Gender*
- WGST 327\* *20th-Century Women Writers: Sex, Gender, and Modernism*
- WGST 329\* *Literature of the American West: Women in the West*
- WGST 331\* *The Psychology of Gender*
- WGST 332 *Self, Sex, and Society in Ancient Greece*
- WGST 333 *Masculinities*
- WGST 335 *The Lifecycle: A Biocultural View*
- WGST 336 *History as a Cultural Myth*
- WGST 337 *Feminist Issues: Witches, Saints, Soldiers and Shrews — Women's Voices in the Renaissance*
- WGST 338 *Gender and Society in Early Modern Europe*
- WGST 341\* *Gender and Politics*
- WGST 349 *Survey of British Women Writers from 1400-1900*
- WGST 360 *Topics in Political Cinema*
- WGST 367 *American Ecofeminism*
- WGST 368\* *Mythologies*
- WGST 372\* *Survey of Victorian Fiction*
- WGST 381\* *History of American Women I: Colonial Beginnings to the Civil War* (enriched version)
- WGST 382\* *History of American Women II: Civil War to the Present* (enriched version)
- WGST 388\* *Generation X in Literature and Culture*
- WGST 389 *Feminine and Masculine Identity*
- WGST 400 *Constructing Identities in Modern Fiction*
- WGST 402 *Feminist Issues: Gender and Immigration*
- WGST 405 *Austen Only*
- WGST 406 *Christine De Pizan in 15th-Century England*
- WGST 410 *The Literary and Historical Image of the Medieval Woman*
- WGST 411 *Special Topics: Masculinity and Literature on American Culture*
- WGST 412 *Women and Women's Voices in French Literature*
- WGST 413 *Medieval Women Writers*
- WGST 415 *Sociolinguistics*
- WGST 420 *Women and Gender in 19th-Century Europe*
- WGST 421 *Shakespeare and Difference*
- WGST 440\* *Women in Music*
- WGST 441 *Hildegard of Bingen*
- WGST 443\* *Victorian Studies: Representing Sexuality in Victorian Culture — Prose, Poetry, Art, Drama, and Advertising*
- WGST 450 *The Literary and Historical Image of the Medieval Woman* (enriched version)
- WGST 451\* *Women, Politics, and Political History*
- WGST 461 *Gender, War, and Representation in Modern France and England*
- WGST 468 *Women and the Welfare State: Sexual Politics and American Poverty*
- WGST 483 *Feminist Issues*
- WGST 484 *Victorian Fiction*
- WGST 496\* *Applied Women's and Gender Studies*
- WGST 497\* *Directed Reading in the Study of Women and Gender*
- WGST 498\* *Independent Study*
- WGST 499\* *Research in the Study of Women and Gender*

See WGST (pages 545–554) in the Courses of Instruction section.

## Administration

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Dean of the Wiess School of Natural Sciences .....	Kathleen S. Matthews
Dean of the School of Continuing Studies .....	Mary B. McIntire
Dean of the School of Social Sciences .....	Robert Stein
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## Administrative Offices

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Administrative Computing .....	Randy Castiglioni
Affirmative Action .....	Russell Barnes
Alumni Association .....	Ann Greene
Athletics .....	J. R. "Bobby" May
Career Services .....	Cheryl Matherly
Cashier .....	Patricia C. Ciampi
Controller .....	Evelyn Stewart
Counseling .....	Lindley Doran
Enrollment: Admission .....	Julie Browning
Enrollment: Administration .....	Barry McFarland
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Human Resources .....	Mary A. Cronin
Multicultural Affairs .....	Catherine E. Clack
Networking .....	Farrell E. Gerbode
New Media and Student Computing .....	William Deigaard
Registrar .....	Jerry Montag
Sponsored Research .....	Jean E. Vorhaben
Study Abroad .....	Shannon Cates

Student Activities .....	Ramona Hicks
Student Health Services .....	Mark Jenkins, M.D.
Student Financial Services .....	TBN
System and LAN Management .....	Vicky Dean
Technology Transfer .....	Daryl Boudreaux
Telecommunications .....	Reggie Clarkson
University Police Department .....	Bill Taylor
University Relations .....	Greg Marshall
User Services .....	Andrea Martin

## College Masters

---

Baker College .....	Mickey Quinones and Karin Dudziak
Brown College .....	Albert Pope and Kathrin Brunner
Hanszen College .....	Klaus and Eugenia Weissenberger
Jones College .....	Enrique and Maribel Barrera
Lovett College .....	John Casbarian and Natalye Appel
Martel College .....	Arthur and Joan Few
Richardson College .....	Steve and Laura Cox
Wiess College .....	Katharine Donato and Daniel Kalb
Will Rice College .....	Dale and Elise Sawyer

## Faculty

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### Emeritus Faculty

- Akers, William Walter**, 1947–93. Professor Emeritus in Chemical Engineering  
B.S. (1943) Texas Technological College; M.S. (1944) University of Texas at Austin;  
Ph.D. (1950) University of Michigan
- Andrews, John F.**, 1982–91. Professor Emeritus of Environmental Science and Engineering  
B.S.C.E. (1951), M.S. (1954) University of Arkansas; Ph.D. (1964) University of California  
at Berkeley
- Awapara, Jorge**, 1957–84. Professor Emeritus of Biochemistry  
B.S. (1941), M.S. (1942) Michigan State University; Ph.D. (1947) University of Southern California
- Bailar, Benjamin F.**, 1987–97. H. Joe Nelson, III, Professor Emeritus of Administration  
B.A. (1955) University of Colorado; M.B.A. (1959) Harvard Graduate School of  
Business Administration
- Baker, Donald Roy**, 1966. Professor Emeritus of Geology and Honorary Associate of  
Brown College  
B.S. (1950) California Institute of Technology; Ph.D. (1955) Princeton University
- Bale, Allen M.**, 1947–78. Athletic Director Emeritus  
B.S. (1930) Rice Institute; M.A. (1939) Columbia University
- Bally, Albert W.**, 1981–96. Harry Carothers Wiess Professor Emeritus of Geology  
Ph.D. (1953) University of Zurich, Switzerland
- Barker, J. R.**, 1949–86. Professor Emeritus of Health and Physical Education  
B.S. (1949) Rice Institute; M.Ed. (1954) University of Texas at Austin
- Beckmann, Herbert W. K.**, 1957–85. Professor Emeritus of Mechanical Engineering  
Cand. Ing. (1939), Dipl. Ing. (1944), Dr. Ing. (1957) Hanover University, Germany

- Bixby, Robert E.**, 1984–98. Noah Harding Professor Emeritus of Computational and Applied Mathematics  
B.S. (1968) University of California at Berkeley; M.S. (1971), Ph.D. (1972) Cornell University
- Bland, Robert L.**, 1954–92. Professor Emeritus of Kinesiology  
B.A. (1953) Central Washington State College; M.A. (1954) Columbia University
- Boterf, Chester Arthur**, 1973–93. Professor Emeritus of Art  
B.A. (1959) Kansas University; M.F.A. (1965) Columbia University
- Bourland, Hardy M.**, 1961–99. Lecturer Emeritus on Electrical and Computer Engineering  
B.S. (1955) Texas Technological College; S.M.E.E. (1957) Massachusetts Institute of Technology
- Brelsford, Jr., John W.**, 1970–2000. Professor Emeritus of Psychology  
B.A. (1960), M.A. (1961) Texas Christian University; Ph.D. (1965) University of Texas at Austin
- Brotzen, Franz Richard**, 1954–86. Stanley C. Moore Professor Emeritus of Materials Science  
B.S. (1950), M.S. (1953), Ph.D. (1954) Case Institute of Technology
- Brown, Katherine Tsanoff**, 1963–89. Professor Emerita of Art History and Honorary Associate of Will Rice College  
B.A. (1938) Rice Institute; M.F.A. (1940) Cornell University
- Burt, George**, 1984–97. Professor Emeritus of Theory and Composition  
B.A. (1955) University of California at Berkeley; M.A. (1958) Mills College; M.F.A. (1962) Princeton University
- Campbell, James W.**, 1959–2000. Professor Emeritus of Biochemistry and Cell Biology  
B.S. (1953) Southwest Missouri State University; M.S. (1955) University of Illinois; Ph.D. (1958) University of Oklahoma
- Cason, Carolyn**, 1956–74. Lecturer Emerita in Dietetics  
B.S. (1934) University of Texas at Austin; M.A. (1939) Columbia University
- Chamberlain, Joseph W.**, 1971–90. Professor Emeritus of Space Physics and Astronomy  
A.B. (1948), A.M. (1949) University of Missouri; M.S. (1951), Ph.D. (1952) University of Michigan
- Chapman, Alan Jesse**, 1946–95. Harry S. Cameron Professor Emeritus of Mechanical Engineering  
B.S.M.E. (1945) Rice Institute; M.S. (1949) University of Colorado; Ph.D. (1953) University of Illinois
- Cheatham, Jr., John Bane**, 1963–96. Professor Emeritus of Mechanical Engineering  
B.S. (1948), M.S. (1953) Southern Methodist University; Ph.D. (1960) Rice University
- Clark, Howard Charles**, 1966–88. Professor Emeritus of Earth Science  
B.S. (1959) University of Oklahoma; M.A. (1965), Ph.D. (1967) Stanford University
- Class, Calvin M.**, 1952–85. Professor Emeritus of Physics  
A.B. (1943), Ph.D. (1951) John Hopkins University
- Copeland, James E.**, 1966–2001. Professor Emeritus of Linguistics and German  
B.A. (1961) University of Colorado; Ph.D. (1965) Cornell University
- Daichman, Graciela**, 1973–99. Lecturer Emerita of Hispanic and Classical Studies  
Profesorado (1959) Instituto Nacional del Profesorado en Lenguas Vivas, Argentina; M.A. (1975), Ph.D. (1983) Rice University.
- Davis, Jr., Sam H.**, 1957–2000. Professor Emeritus in Chemical Engineering and Computational and Applied Mathematics  
B.A. (1952), B.S. (1953) Rice Institute; ScD. (1957) Massachusetts Institute of Technology
- De Bremaecker, Jean-Claude**, 1959–94. Professor Emeritus of Earth Science  
Ingenieur Civil des Mines (1948) University of Louvain, Belgium; M.S. (1950) Louisiana State University; Ph.D. (1952) University of California at Berkeley
- Dessler, Alexander J.**, 1963–93. Professor Emeritus of Space Physics and Astronomy  
B.S. (1952) California Institute of Technology; Ph.D. (1956) Duke University
- Doughtie, Edward O.**, 1963–2001. Professor Emeritus of English  
A.B. (1958) Duke University; A.M. (1960), Ph.D. (1964) Harvard University
- Drew, Katherine Fischer**, 1950–96. Lynette S. Autrey Professor Emerita of History  
B.A. (1944), M.A. (1945) Rice Institute; Ph.D. (1950) Cornell University
- Dyson, Derek C.**, 1966–2000. Professor Emeritus of Chemical Engineering  
B.A. (1955) University of Cambridge; Ph.D. (1966) University of London
- Estle, Thomas L.**, 1967–96. Professor Emeritus of Physics  
B.A. (1953) Rice Institute; M.S. (1954), Ph.D. (1957) University of Illinois

- Evans, Elinor Lucile**, 1964–85. Albert K. and Harry K. Smith Professor Emerita of Architecture  
B.A. (1938) Oklahoma State University; M.F.A. (1954) Yale University
- Fliegel, Raphael**, 1975–89. Professor Emeritus of Violin
- Freeman, John W.**, 1964–2000. Professor Emeritus of Space Physics and Astronomy and Associate of Lovett College  
B.S. (1957) Beloit College; M.S. (1961); Ph.D. (1963) University of Iowa
- Gardner, Gerald H. F.**, 1990–93. Professor Emeritus of Geophysics  
B.S. (1948) Trinity College, Dublin; M.Sc. (1949) Carnegie Mellon University; Ph.D. (1953) Princeton University
- Gordon, Chad**, 1970–99. Professor Emeritus of Sociology  
B.S. (1957), M.A. (1962), Ph.D. (1963) University of California at Los Angeles
- Gordon, William E.**, 1965–85. Distinguished Professor Emeritus of Space Physics and Astronomy and of Electrical and Computer Engineering  
B.A. (1939), M.A. (1942) Montclair State College; M.S. (1946), Ph.D. (1953) Cornell University
- Hackerman, Norman**, 1970–85. President Emeritus and Distinguished Professor Emeritus of Chemistry  
A.B. (1932), Ph.D. (1935) Johns Hopkins University
- Hake, Evelyn**, 1932–74. Lecturer Emerita in Biology  
B.A. (1930), M.A. (1932) Rice Institute
- Hale, Elton B.**, 1963–79. Professor Emeritus of Accounting  
B.S. (1937), M.A. (1940) Southwest Texas State Teachers College; Ph.D. (1948) University of Texas at Austin
- Hanz, Ingrid**, 1987–2000. Lecturer Emerita of Spanish  
B.A. (1949) Universidad de la Republica; M.A. (1987) Rice University
- Havens, Neil**, 1964–2000. Professor Emeritus of Art and Art History  
B.A. (1956) Rice Institute; M.A. (1959) Indiana University
- Haymes, Robert C.**, 1968–98. Professor Emeritus of Space Physics and Astronomy  
B.A. (1952), M.S. (1953), Ph.D. (1959) New York University
- Hellums, Jesse David**, 1960–98. A. J. Hartsook Professor Emeritus of Chemical Engineering  
B.S. (1950), M.S. (1958) University of Texas at Austin; Ph.D. (1961) University of Michigan
- Heymann, Dieter**, 1966–98. Professor Emeritus of Earth Science  
M.S. (1954), Ph.D. (1958) University of Amsterdam, The Netherlands
- Hightower, Joe W.**, 1967–01. Professor Emeritus of Chemical Engineering  
M.S. (1961), Ph.D. (1963) John Hopkins University
- Hodges, Lee**, 1930–71. Professor Emeritus of French  
B.S. (1930) Harvard University; M.A. (1934) Rice Institute
- Holt, Edward C.**, 1956–93. Professor Emeritus of Civil and Environmental Engineering  
S.B. (1945), S.M. (1947) Massachusetts Institute of Technology; Ph.D. (1956) Pennsylvania State University
- Huddle, Donald L.**, 1964–92. Professor Emeritus of Economics  
B.S. (1959), M.A. (1960) University of California at Los Angeles; Ph.D. (1964) Vanderbilt University
- Hyman, Harold M.**, 1968–97. William P. Hobby Professor Emeritus of History  
B.A. (1948) University of California at Los Angeles; M.A. (1950); Ph.D. (1952) Columbia University
- Jitcoff, Andrew N.**, 1950–72. Professor Emeritus of Russian  
Bachelor (1928), Master (1931) Prague Institute of Technology, Czechoslovakia
- Jones, Samuel**, 1973–97. Professor Emeritus of Music  
B.A. (1957) Millsaps College; M.A. (1958), Ph.D. (1960) Eastman School of Music, University of Rochester
- Kiperman, Anita**, 1976–98. Lecturer Emerita of Spanish  
B.A. (1957) Universidad Nacional de Buenos Aires; M.A. (1971) University of Houston
- Kobayashi, Riki**, 1951–97. Louis Calder Professor Emeritus in Chemical Engineering  
B.S. (1944) Rice Institute; M.S.E. (1947), Ph.D. (1951) University of Michigan
- Lamb, Sydney M.**, 1981–98. Agnes Cullen Arnold Professor Emeritus of Linguistics and Cognitive Sciences  
B.A. (1951) Yale University; Ph.D. (1958) University of California at Berkeley

- Leal, Maria Teresa**, 1965–96. Professor Emerita of Spanish and Portuguese  
B.A. (1946) Pontificia Universidade Católica, Brazil; Ph.D. (1963) Universidade Federal de Rio de Janeiro, Brazil
- Lecuyer, Maurice Antoine**, 1962–79. Professor Emeritus of French  
Baccalaureat es lettres (1937), Licence es lettres (1943), Diplome d'études superieures (1944) Université de Paris, France; Ph.D. (1954) Yale University
- Lee, Eva J.**, 1969–2000. Professor Emerita of Kinesiology  
B.S. (1962) North Texas State University; M.Ed. (1967) Sam Houston State University; Ed.D. (1974) Louisiana State University
- Leeds, Jr., J. Venn**, 1964–89. Professor Emeritus of Electrical and Computer Engineering  
B.A. (1955), B.S.E.E. (1956) Rice Institute; M.S.E.E. (1960), Ph.D. (1963) University of Pittsburgh; J.D. (1972) University of Houston
- Lewis, Edward S.**, 1948–90. Professor Emeritus of Chemistry  
B.S. (1940) University of California at Berkeley; Ph.D. (1947) Harvard University
- Meixner, John**, 1968–95. Professor Emeritus of English  
B.A. (1951) City College of New York; M.A. (1953), Ph.D. (1957) Brown University
- Merwin, John E.**, 1955–98. Professor Emeritus of Civil and Environmental Engineering  
B.A. (1952), B.S.M.E. (1953), M.S.M.E. (1955) Rice Institute; Ph.D. (1962) University of Cambridge
- Michel, F. Curtis**, 1963–2000. Andrew Hays Buchanan Professor Emeritus of Astrophysics  
B.A. (1955), Ph.D. (1962) California Institute of Technology
- Miele, Angelo**, 1964–93. Foyt Family Professor Emeritus in Mechanical Engineering and Materials Science and Computational and Applied Mathematics  
Dr. C.E. (1944), Dr. A.E. (1946) University of Rome
- Milburn, Ellsworth**, 1975–99. Professor Emeritus of Composition and Theory  
B.A. (1962) University of California at Los Angeles; M.A. (1968) Mills College; D.M.A. College-Conservatory of Music, University of Cincinnati
- Morehead, Jr., James Caddell**, 1940–79. Professor Emeritus of Architecture and Honorary Associate of Baker College  
A.B. (1935) Princeton University; B.Arch. (1939) Carnegie Institute of Technology
- Nielsen, Jr., Niels C.**, 1951–91. Professor Emeritus of Philosophy and Religious Thought and Honorary Associate of Will Rice College  
B.A. (1942) George Pepperdine University; B.D. (1946), Ph.D. (1951) Yale University
- Nordgren, Ronald P.**, 1989–2000. Herman and George R. Brown Professor Emeritus of Civil and Environmental Engineering  
B.S. (1957), M.S. (1958) University of Michigan; Ph.D. (1962) University of California at Berkeley
- O'Dell, Charles Robert**, 1982–2000. Andrew Hays Buchanan Professor Emeritus of Astrophysics  
B.S.Ed. (1959) Illinois State University; Ph.D. (1962) University of Wisconsin at Madison
- Oliver, Covey**, 1979–81. Radoslav A. Tsanoff Professor Emeritus of Public Affairs  
B.A. (1933), J.D. (1936) University of Texas at Austin; LL.M. (1953), S.J.D. (1954) Columbia University; LL.D. (1976) Southern Methodist University
- Oliver-Smith, Philip**, 1969–82. Professor Emeritus of Art History  
B.A. (1937), M.A. (1950) University of California at Berkeley; Ph.D. (1969) New York University
- O'Neil, John F.**, 1965–80. Professor Emeritus of Art  
B.F.A. (1936), M.F.A. (1939) University of Oklahoma
- Palmer, Graham A.**, 1974–2000. Professor Emeritus of Biochemistry and Cell Biology and Associate of Sid Richardson College  
B.S. (1957), Ph.D. (1962) University of Sheffield
- Parsons, David G.**, 1953–81. Professor Emeritus of Art and Honorary Associate of Will Rice College  
B.S. (1934), M.S. (1937) University of Wisconsin
- Pearson, Jr., James Boyd**, 1965–99. J. S. Abercrombie Professor Emeritus in Electrical and Computer Engineering  
B.S.E.E. (1958), M.S.E.E. (1959) University of Arkansas; Ph.D. (1962) Purdue University
- Pfeiffer, Paul E.**, 1947–97. Professor Emeritus of Computational and Applied Mathematics  
B.S.E.E. (1938) Rice Institute; B.D. (1943) Southern Methodist University; M.S.E.E. (1948), Ph.D. (1952) Rice Institute

- Philpott, Charles William**, 1964–96. Professor Emeritus of Ecology and Evolutionary Biology  
B.A. (1957), M.S. (1958) Texas Technological College; Ph.D. (1962) Tulane University
- Piper, William Bowman**, 1969–1999. Professor Emeritus of English  
B.A. (1951) Harvard University; M.A. (1952) Columbia University; Ph.D. (1958) University of Wisconsin at Madison
- Poindexter, Hally Beth W.**, 1965–98. Professor Emeritus of Kinesiology  
B.A. (1947) Rice Institute; B.S. (1949) University of Houston; M.A. (1950) University of Northern Colorado; Ed.D. (1957) Columbia University
- Raaphorst, Madeleine Rousseau**, 1963–89. Professor Emerita of French  
Baccalaureat es lettres (1939) Université de Poitiers, France; Licence en droit (1943) Université de Paris, France; Ph.D. (1959) Rice Institute
- Rabson, Thomas A.**, 1959–2000. Professor Emeritus of Electrical and Computer Engineering  
B.A. (1954), B.S.E.E. (1955), M.A. (1957), Ph.D. (1959) Rice Institute
- Rachford, Jr., Henry H.**, 1964–82. Professor Emeritus of Mathematical Sciences  
B.S. (1945), M.A. (1947) Rice Institute; Sc.D. (1950) Massachusetts Institute of Technology
- Ransom, Jr., Harry Steelsmith**, 1954–81. Professor Emeritus of Architecture  
B.Arch. (1947) Carnegie Institute of Technology; M.Arch. (1967) Texas A&M University
- Rea, Joan**, 1968–2000. Professor Emerita of Hispanic and Classical Studies  
B.A. (1954) New York University; M.A. (1964) University of Houston; Ph.D. (1970) University of Texas at Austin
- Risser, J. R.**, 1946–81. Professor Emeritus of Physics  
A.B. (1931) Franklin and Marshall College; M.A. (1935), Ph.D. (1938) Princeton University
- Sims, James R.**, 1942–87. Herman and George R. Brown Professor Emeritus of Civil and Environmental Engineering  
B.S. (1941) Rice Institute; M.S. (1950), Ph.D. (1956) University of Illinois
- Stebbins, Ronald F.**, 1968–95. Professor Emeritus of Space Physics and Astronomy  
B.Sc. (1952), Ph.D. (1956) University College, London
- Stormer, Jr., John C.**, 1983–95. Croneis Professor Emeritus of Geology  
A.B. (1963) Dartmouth College; Ph.D. (1971) University of California at Berkeley
- Subtelny, Stephen**, 1968–2000. Professor Emeritus of Ecology and Evolutionary Biology  
B.A. (1949) Hobart College; M.A. (1952), Ph.D. (1955) University of Missouri
- Thrall, Robert**, 1969–84. Noah Harding Professor Emeritus of Mathematical Sciences and Professor Emeritus of Administrative Science  
B.A., M.A. (1935) Illinois College; Ph.D. (1937) University of Illinois
- Todd, Anderson**, 1949–92. Gus Sessions Wortham Professor Emeritus of Architecture  
B.A. (1943), M.F.A. (1949) Princeton University
- Trammell, George T.**, 1961–93. Professor Emeritus of Physics  
B.A. (1944) Rice Institute; Ph.D. (1950) Cornell University
- Trepel, Shirley**, 1975–94. Professor Emerita of Violoncello  
B.Mus. (1945) Curtis Institute of Music
- Urrutibéitzy, Hector N.**, 1967–2000. Professor Emeritus of Hispanic and Classical Studies  
Profesorado (1956) La Plata National University, Argentina; Ph.D. (1968) Stanford University
- Vail, Peter R.**, 1986–2001. W. Maurice Ewing Professor Emeritus of Oceanography  
A.B. (1952) Dartmouth College; M.S. (1953), Ph.D. (1959) Northwestern University
- Van Helden, Albert**, 1970. Lynette S. Autrey Professor Emeritus of History  
B.Eng. (1962), M.S. (1964) Stevens Institute of Technology; M.A. (1967) University of Michigan; Ph.D. (1970) London University
- von der Mehden, Fred R.**, 1968–97. Albert Thomas Professor Emeritus of Political Science  
B.A. (1948) University of the Pacific; M.A. (1950) Claremont Graduate School; Ph.D. (1957) University of California at Berkeley
- Wadsworth, Philip A.**, 1964–73. Professor Emeritus of French  
A.B. (1935), Ph.D. (1939) Yale University
- Walker, James B.**, 1964–92. Professor Emeritus of Biochemistry and Cell Biology  
B.S. (1943) Rice Institute; M.A. (1949), Ph.D. (1952) University of Texas at Austin

- Wall, Frederick T.**, 1972–79. Professor Emeritus of Chemistry  
B.C. (1933), Ph.D. (1937) University of Minnesota
- Walters, G. King**, 1963–99. Sam and Helen Worden Professor Emeritus of Physics  
B.A. (1953) Rice Institute; Ph.D. (1956) Duke University
- Wang, Chao-Cheng**, 1968–2000. Noah Harding Professor Emeritus of Computational and Applied Mathematics  
B.S. (1959) National Taiwan University; Ph.D. (1965) Johns Hopkins University
- Wells, Jr., Raymond O.**, 1965–2000. Professor Emeritus of Mathematics and Education  
B.A. (1962) Rice University; M.S. (1964), Ph.D. (1965) New York University
- Widrig, Walter M.**, 1969–2000. Professor Emeritus of Art History  
B.A. (1951) Yale University; M.A. (1956) Columbia University; Ph.D. (1975) New York University
- Wilhoit, Jr., James Cammack**, 1954–81. Professor Emeritus of Mechanical Engineering and Mathematical Sciences  
B.S.M.E. (1948) Rice Institute; M.S. (1951) Texas A&M University; Ph.D. (1954) Stanford University
- Wilson, Joseph B.**, 1954–98. Professor Emeritus of German  
B.A. (1950), M.A. (1953) Rice Institute; Ph.D. (1960) Stanford University
- Winkler, Michael**, 1967–2000. Professor Emeritus of German  
B.A. (1961) St. Benedict's College; M.A. (1963), Ph.D. (1966) University of Colorado
- Young, Richard D.**, 1965–92. Professor Emeritus of Economics and Mathematical Sciences  
B.A. (1951), M.A. (1954) University of Minnesota; Ph.D. (1965) Carnegie Institute of Technology

## Faculty

- Aazhang, Behnaam**, 1985. J.S. Abercrombie Professor in Electrical and Computer Engineering  
B.S. (1981), M.S. (1983), Ph.D. (1986) University of Illinois
- Abib, Roberto**, 2001. Adjunct Professor of Executive Education  
B.S. (1983) Rice University; M.S. (1988) University of Texas at Austin; M.B.A. (2000) Rice University
- Achard, Michel**, 1997. Associate Professor of French Studies  
B.A. (1983) University of Aix-en-Provence; M.A. (1987), Ph.D. (1993) University of California at San Diego
- Ainsworth, Anne-Marie**, 2001. Adjunct Professor of Executive Education  
B.S. (1978) University of Toledo; M.B.A. (2000) Rice University
- Akin, John Edward**, 1983. Professor of Mechanical Engineering and Computational and Applied Mathematics  
B.S. (1964) Tennessee Polytechnic Institute; M.S. (1966) Tennessee Technological University; Ph.D. (1968) Virginia Polytechnic Institute
- Albin, Verónica S.**, 1998. Lecturer of Spanish  
B.A. (1989) University of Pennsylvania
- Alcover, Madeleine**, 1975. Professor of French  
Licence de lettres modernes (1962), Diplôme d'études supérieures (1963), Doctorat de 3e cycle (1965) France
- Alemany, Lawrence B.**, 1994. Lecturer on Chemistry  
B.S. (1975) City College of New York; Ph.D. (1980) University of Chicago
- Alford, John R.**, 1985. Associate Professor of Political Science  
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Mag. phil (1985) University of Vienna; M.A. (1994) University of Texas at Austin
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M.S. (1997), Ph.D. (2000) The Institute of Chemical Technology, Prague
- Böettcher, Markus**, 1997. Chandra Postdoctoral Fellow in Physics and Astronomy  
B.S. (1994), Ph.D. (1997) MPI für Radioastronomie
- Bondos, Sarah**, 1998. Robert A. Welch Postdoctoral Fellow and Lecturer in Biochemistry  
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B.S. (1993) University of North Carolina at Chapel Hill; Ph.D. (1998) University of Illinois  
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- Bonilla-Rios, Jaime**, 1999. Complimentary Visiting Scholar in Mechanical Engineering  
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B.S. (1980) Instituto Tecnológico y de Estudios Superiores de Monterrey; M.S. (1984) Rice  
University; Ph.D. (1996) Texas A&M University
- Bott, Simon G.**, 1997. Complimentary Visiting Scholar in Chemistry  
B.S. (1983) Bristol University; Ph.D. (1986) University of Alabama
- Budimic, Zoran**, 2001. Research Scientist of Computer Science  
B.S. (1994) University of Belgrade; Ph.D. (2001) Rice University
- Campbell, Paul**, 1999. Postdoctoral Research Associate in Biochemistry and Cell Biology  
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- Chapman, Gary**, 1997. Postdoctoral Research Associate in Bioengineering  
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- Chen, Edward S.**, 1997. Member of the Technical Staff in Computer Science  
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B.S. (1988) Hunan Normal University; M.S. (1991), Ph.D. (1996) Anhui Institute of Optics and Fine Mechanics
- Chen, Jinhai**, 2001. Postdoctoral Research Associate in Chemistry  
B.S. (1988), M.S. (1993), Ph.D. (1996) East China Normal University, Shanghai
- Chiu, Yu-Hing**, 2000. Robert A. Welch Postdoctoral Fellow in Chemistry  
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B.S. (1985) University of Iowa; M.S. (1990) SW Texas State University; Ph.D. (1994) University of Texas
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B.Sc. (1994), Ph.D. (1999) University of Calgary
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B.S. (1992) Texas A&M University; Ph.D. (1998) University of Houston
- Deery, William J.**, 1996. Complimentary Visiting Scholar in Biochemistry and Cell Biology  
B.S. (1974) Pennsylvania State University; M.A. (1979), Ph.D. (1981) Temple University
- Dominey, Wallace**, 1999. Complimentary Research Scientist in Ecology and Evolutionary Biology  
B.A. (1975) University of Texas; Ph.D. (1981) Cornell University
- Dou, Yi**, 1997. Robert A. Welch Postdoctoral Fellow in Biochemistry and Cell Biology  
M.B. (1990) Beijing Medical University, Ph.D. (1996) Case Western Reserve University
- Dumitrica, Traian**, 2000. Postdoctoral Research Associate in Mechanical Engineering and Materials Science  
Diploma (1992) University of Bucharest; Ph.D. (2000) Texas A&M University
- Dustin, James**, 2001. Research Scientist and Laboratory Manager in Chemistry  
B.S. (1979) Southwestern University; Ph.D. (1984) University of Texas at Austin
- Duston, Karen**, 1996. Research Scientist in Environmental Science and Engineering for the Energy and Environmental Systems Institute  
B.S. (1979), M.S. (1980) Texas A&M University; B.S. (1982) University of Texas at El Paso; Ph.D. (1995) Rice University
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B.S. (1990), Ph.D. (1993) University of Bonn
- Eppley, Geary W.**, 1995. Research Scientist in Physics and Astronomy  
B.A. (1988), B.S. (1989) University of Houston; M.S. (1993), Ph.D. (1995) Rice University
- Ertan, Inci**, 1999. Research Scientist in Earth Sciences  
B.S., Ph.D. (1971) University of Vienna, Austria
- Falcon, Catherine**, 1999. Complimentary Visiting Scholar in Biochemistry and Cell Biology  
B.S. (1984) University of Notre Dame; Ph.D. (1999) Rice University
- Farrell, Brenda**, 1998. NLM/NIH Postdoctoral Fellow in Biochemistry and Cell Biology  
B.S. (1982) University of Glasgow; M.S. (1986) University of Guelph; Ph.D. (1994) University of London
- Fowler, Robert L.**, 1996. Research Scientist in Computer Science  
A.B. (1971) Harvard College; M.S. (1981), Ph.D. (1985) University of Washington
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- Garner, Trevor**, 2000. Postdoctoral Research Associate in Physics and Astronomy  
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- Geurts, Franciscus**, 2000. Postdoctoral Research Associate in Physics and Astronomy  
Ph.D. (1999) Universiteit Utrecht
- Ghayour, Kaveh**, 2000. Postdoctoral Research Associate in Mechanical Engineering and Materials Science and in Computational and Applied Mathematics  
B.Eng (1993), M.Sc. (1994) Imperial College of Science & Technology, London, UK;  
Ph.D. (2000) Old Dominion University
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- Goldstein, Aaron**, 1997. Postdoctoral Research Associate in Institute of Biosciences and Bioengineering  
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- Gordon, Mark B.**, 1994. Complimentary Research Scientist in Earth Science  
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- Gotze, Jurgen**, 1994. Visiting Scholar in Electrical and Computer Engineering  
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- Guidy, Gwyn**, 1993. Member of the Technical Staff in Information Technology Development and Complimentary Research Staff in Computer Science  
B.S. (1979), B.S. (1980), M.S. (1981) University of Houston
- Guo, Hongkai**, 2000. Postdoctoral Research Associate in Bioengineering  
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- Guo, Li-Wei**, 2000. Postdoctoral Research Associate in Biochemistry and Cell Biology  
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B.S. (1989) University of Science and Technology of China, M.S. (1992) Yale University, Ph.D. (1997) Harvard University
- Hunt, Neil**, 2000. Robert A. Welch Postdoctoral Fellow in Chemistry  
B.A. (1997), Ph.D. (2000) University of Cambridge
- Hwang, Jiunn-Jye**, 2000. Postdoctoral Research Associate in Chemistry  
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M.S. (1997) Higher Chemical College of Russian Academy of Sciences; Ph.D. (2000) Rice University
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B.S. (1976) Beijing Medical University, China
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B.S. (1989), M.S. (1991), Ph.D. (1995) Universidade Federal do Rio de Janeiro

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- Wilhelm, Mark S.**, 1989. Complimentary Research Associate in Chemistry
- Williams, Wes**, 2000. Robert A. Welch Postdoctoral Fellow in Biochemistry and Cell Biology  
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## University Standing Committees for 2001–2002

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The president is an ex officio member of all committees except for the Faculty Council and University Council, which he chairs.

Committee on Admission and Student Financial Aid	Residential Colleges Management Advisory Committee
Committee on Affirmative Action	Committee on Salary Equity
Committee of the College Masters	Committee on Security
Committee on Education	Committee on Scholarships and Awards
Committee on Environmental Health and Safety	Committee on Teaching
Committee on Examinations and Standing	Committee on the Undergraduate Curriculum
Committee on Faculty and Staff Benefits	Rice University Athletics Committee
Committee on the Faculty Handbook	Rice University Marshals Committee
Committee on the Library	R.O.T.C. Committee
Committee on Parking	Faculty Council
Committee on Patents	Graduate Council
Committee on President's Lectures	Research Council
	University Council

## Chairs and Lectureships

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Throughout its history, Rice University has been especially fortunate in the number of its friends and benefactors. Some of these are memorialized in the names of buildings and special physical facilities; others have generously provided for the enrichment of the university's intellectual life by establishing chairs and lectureships either on a temporary or a permanent basis. Rice takes pleasure in recognizing on these pages some of these contributors to its academic excellence.

### Chairs

J. S. Abercrombie Chairs in the School of Engineering  
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 Andrew W. Mellon Junior Humanities Scholars  
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 Elma Schneider Chair in Social Sciences  
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 Dorothy Richard Starling Chair in Classical Violin  
 Stewart Memorial Chair in Biochemistry

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 Gene Brice Colloquium Fund for Electrical Engineering  
 Brown Foundation—J. Newton Rayzor Lectures  
 Carroll Camden Lectureship in English Literature  
 William Wayne Caudill Lecture Series in Architecture  
 William B. Coleman, Jr., Colloquium Fund for Architecture  
 Deschko Family Lectureship in Music  
 English Department Distinguished Professor Lectureship  
 Joe L. Franklin Lectureship in Physical Chemistry  
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 Thomas W. Leland Visiting Lectureship in Chemical Engineering  
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 The Rockwell Lectures  
 Harold E. “Bud” Rorschach Memorial Lecture Fund  
 The Harold E. and Margaret R. Rorschach Memorial Lectures in Legal History  
 Tsanoff Lectureship in the Humanities  
 Dr. Thomas J. and Jane A. Vanzant Lectureship  
 Paul C. Wilber Lectureship in Chemical Engineering

### **Faculty/Staff Awards**

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 of Engineering

### **Programs**

Hilda and Hershel Rich Endowment for Leadership Rice  
 Linda and Ken Lay Family Endowment  
 Martel Student Life Fund  
 John Murfee Worsham Memorial Endowment  
 Rice Rugby Alumni Fund

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