

College of Arts and Sciences

College Administration

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The College of Arts and Sciences not only offers a wide variety of programs in teaching, research and outreach, but also supports and reinforces all the other programs of the University. Apart from strong programs in the natural and social sciences and in the liberal and fine arts, the College provides a number of more specialized and interdisciplinary strengths and a variety of professional and pre-professional training. The College's 22 departments and two schools offer 62 degree programs and options at the bachelor's level, and in conjunction with the Graduate College, 25 master's and 15 doctoral degrees.

The Department of Economics and Legal Studies in Business in the Spears School of Business offers BA and BS degrees through the College of Arts and Sciences. The Department of Biochemistry and Molecular Biology in the College of Agricultural Sciences and Natural Resources also offers the BS through the College of Arts and Sciences.

The College of Arts and Sciences provides academic preparation for a wide variety of professions and graduate programs including: law, medicine, nursing, optometry, veterinary medicine, graphic arts, teaching, writing, foreign service, urban and regional planning, journalism, public service, radio/TV, advertising, public relations, medical technology, military science, public affairs, corrections, social services, and fine and performing arts.

Accreditation

Refer to departmental listings that follow for information on accreditation of specific programs.

High School Preparation

In addition to the curricular requirements for admission specified by the Oklahoma State Regents for Higher Education, The College of Arts and Sciences strongly recommends that high school students have a fourth year of mathematics; a third year of laboratory science; at least two years of a single foreign language; one year of arts such as music, theatre, or studio art, and computer literacy.

Scholarships

A number of undergraduate scholarships are available through the College and through the departments and schools within the College. Interested students should inquire in the Office of Student Academic Services or access the OSU Internet site for a list of available scholarships. Arts and Sciences students are also encouraged to apply for the variety of scholarships available through the University's Office of Scholarships and Financial Aid.

Student Success Center

The Arts and Sciences Student Success Center is comprised of four units listed below. University-wide coordination of pre-professional advising is provided through the Center, so regardless of major, pre-law students may consult with an adviser in Student Academic Services, and pre-health students may consult with an adviser in Life Sciences and Pre-Health Advising.

Student Academic Services. The academic advising process in Arts and Sciences is coordinated by Student Academic Services. The advising staff in Student Academic Services advises freshmen and undecided students. Departmental advisers provide advising for students who have declared their majors. The general education program in the College of Arts and Sciences allows undecided freshmen to make progress toward most degrees for up to three semesters, while

exploring possible fields of study with an academic adviser. The responsibility for satisfying all requirements for a degree and for ensuring that a degree plan has been submitted rests with the student. Advisers assist students in curriculum planning, and students are encouraged to consult fully with their advisers.

The Student Academic Services staff represents the College in the University's recruiting activities and represents the dean in such matters as petitions for excessive hours, change of major or college, and student withdrawals. Services also include graduation certification, information about college programs and requirements, and referral of A&S students to campus support services.

Career Services. The primary goal of A&S Career Services is to promote academic excellence to enhance career planning and lifelong success. Services offered include career counseling, job and internship search strategies, and assistance with preparation of resumes and cover letters. Presentations on a wide-range of career-related topics are offered to classes and clubs.

Life Sciences and Pre-Health Advising. This unit advises students within the major fields of life science study through the departments of botany, microbiology & molecular genetics, and zoology and students interested in pursuing a career in health professions. The pre-health professions curriculum at OSU prepares students to be competitive applicants to health professions program through a wide variety of educational, research, leadership and volunteer opportunities and a comprehensive advising system.

Outreach. The mission of A&S Outreach is to extend intellectual resources, disseminate knowledge to learners at any time and any place, and provide lifelong learning opportunities. This is accomplished through offering high school and collegiate distance learning courses, international credit courses, and field trip courses. Outreach also coordinates academic conferences, industry workshops and seminars, and cultural outreach opportunities.

Academic Programs

Undergraduate Programs. Requirements for all degree programs and options are detailed in *Undergraduate Programs and Requirements* publication available online at registrar.okstate.edu. Separate sheets, stating the requirements for any particular degree, may be obtained on request from the department or college in which the degree is offered.

Bachelor of Arts (BA):

American studies
 art
 economics
 English
 French
 geography
 German
 history
 liberal studies
 mathematics
 multimedia journalism
 music
 philosophy
 political science
 psychology
 Russian language and literature
 sociology
 Spanish
 sports media
 strategic communication
 theatre

Bachelor of Science (BS):

biochemistry
 biological sciences
 botany
 chemistry
 communication sciences and disorders
 computer science
 economics
 geography
 geology

liberal studies
 mathematics
 microbiology/cell and molecular biology
 multimedia journalism
 physics
 physiology
 political science
 psychology
 sociology
 sports media
 statistics
 strategic communication
 zoology

Bachelor of Fine Arts (BFA):

art (graphic design and studio)

Bachelor of Music (BM):

elective studies in business
 music education (instrumental/vocal certification)
 performance

Second Bachelor's Degree. To secure a second bachelor's degree, a student must complete a minimum of 30 semester credit hours in addition to those required for the first degree. The number could be higher depending on what a student must do to satisfy all the requirements for the second degree.

A student seeking a second degree in the College of Arts and Sciences at OSU should ask his or her second adviser to submit a degree plan for the second degree, clearly headed "second degree," and showing how *all* the requirements of the second degree are to be satisfied. The second degree plan should be sent to the College of Arts and Sciences Office of Student Academic Services no later than two weeks after the student's last enrollment.

Students wishing to complete degrees in two different colleges at OSU should consult with each office of student academic services. Concurrent enrollment in two colleges is possible, but a student must be enrolled in a college for at least two semesters before becoming eligible for a degree from that college.

Second Majors and Minors. A student majoring in one field may also complete the specified requirements for a "major" or a "minor" in other fields, the additional majors or minors may be noted on the student's transcript. Such specified requirements may be obtained from the department in which the second major or minor is sought, or from the Office of Student Academic Services. The student must formally declare each major and minor by completing a declaration form with each respective college. During the semester in which the student is enrolled in courses that will complete the second major or minor the student should ask the adviser in the second major or minor to submit certification of completion of the required courses to the Office of Student Academic Services in the College of Arts and Sciences.

Graduate Programs. Twenty-five master's degrees are offered in the College along with 15 doctoral degrees. For details, see the departmental entries that follow or consult the "Graduate College" section in the *Catalog*.

Special Academic Programs

The Honors College. The College of Arts and Sciences has offered honors courses since the 1960s and has the greatest number of students and faculty participating in The Honors College at Oklahoma State University. The Honors College provides outstanding students with the opportunity to study, conduct research and interact with faculty and other honors students in a variety of settings designed to assist talented students who seek to make the most of their educational opportunities. Honors sections of many general education courses allow participating students the benefits of small classes taught by experienced members of the faculty, thus combining the extensive resources of a major comprehensive university with personal faculty attention to each student. Special honors seminars provide coverage of topical issues each semester in formats that encourage the exchange of ideas through discussion and writing. Honors seniors complete the requirements of The Honors College by undertaking a senior honors thesis (or similar creative activity), and honors seniors also may earn honors credit by enrollment in graduate seminars.

Three Honors College awards are available to A&S students—the General Honors award, the Departmental Honors award in the student's major field, and The Honors College degree (which is earned by completing both General and Departmental Honors requirements with a minimum of 39 honors hours with 3.50 OSU and cumulative grade-point averages). These awards are reflected on the student's transcript and a special honors diploma is awarded to students completing the requirements for The Honors College degree.

Priority enrollment is provided for students who are active in The Honors

College. This allows honors students to select honors courses and other courses taught by outstanding faculty at the earliest possible date each semester and facilitates the development of class schedules tailored to the special needs of honors students. Eligibility for admission to The Honors College as a first-semester freshman is based on an ACT composite score of 27 or higher (or comparable SAT score) with a high school grade-point average of 3.75 or higher. Later entry for students with seven or more credit hours is permitted on the basis of OSU and cumulative grade-point averages. Transfer students with seven or more credit hours are eligible on the basis of cumulative grade-point average.

Bachelor of University Studies (BUS). The BUS in the College of Arts and Sciences allows students with unique educational objectives that cannot be fulfilled by any of the existing degree programs to design an individual plan of study fitted to the student's particular needs. BUS plans must be approved by the director of A&S Student Academic Services, and the Office of the Provost and Senior Vice-President.

Geographic Information Systems Certificate. The Geographic Information Systems (GIS) certificate provides a specialized course of study for interested students. The flexible program provides students with a theoretical and applied foundation concerning the rapidly growing field of GIS. The program is open to any student at Oklahoma State University. For more information, contact the GIS Certificate coordinator in the Department of Geography, 337 Murray Hall.

High School Teaching Preparation. Students earning degrees in the College of Arts and Sciences may, by completing certain courses, receive state licensure for teaching in the secondary schools. Full details may be obtained from the OSU Professional Education Unit in the College of Education, 325 Willard.

It is possible to qualify for teaching licensure and the bachelor's degree within the minimum semester credit hours required for graduation. If not possible, students may meet the requirements for the degree and then complete the licensure requirements by taking additional courses.

Students who wish to qualify for teaching licensure should consult as early as possible with the adviser in their fields of interest, and apply for admission to professional education as soon as possible, preferably before the end of their sophomore year. Full teaching certification is awarded by the State Department of Education when the licensed candidate has successfully completed a period of teaching in a school system.

Pre-professional Programs in the Health Professions. Pre-medicine, Pre-dentistry, Pre-optometry, Pre-pharmacy, Pre-chiropractic and Pre-veterinary Medicine.

The pre-professional curricula for physicians, dentists, podiatrists, optometrists, pharmacists, chiropractors and veterinarians have the same basic core because they must prepare students for professional schools whose admission requirements are almost identical. These include a strong foundation in math, chemistry, physics and biology, the disciplines on which major advances in the health field depend. Included also are courses to develop written and spoken communication skills, which are highly important for a good relationship with patients, the public and other professionals.

Beyond this required core, pre-professional students may choose courses and a major as freely as any other students in the College of Arts and Sciences. Medical schools encourage study in the social sciences and humanities that contributes to the understanding of human beings in their entirety—their history and environment, their attitudes and values, their emotions, motivations, interpersonal relationships and cultural heritage. All of these may affect sickness and health.

Some professional schools do not state a firm minimum grade-point average for admission, but a student should maintain better than a 3.00 grade-point average to be competitive. The specific admission requirements of medical, dental and veterinary schools are available on the Internet and in the Office of Life Sciences and Pre-health Advising. The OSU pre-medical and pre-veterinary course requirements are listed in the "Center for Veterinary Health Sciences" and the "Center for Health Sciences" sections of the *Catalog*. Students whose goal is admission to medical, dental, podiatry, optometry, pharmacy or veterinary programs should consult with a pre-health adviser in the Office of Life Sciences and Pre-health Advising for information regarding specific requirements of these programs.

Allied Health Professions. The allied health professions for which one can prepare at Oklahoma State University include dental hygiene, nursing, occupational therapy, physical therapy, physician's associate and medical imaging and radiation sciences. The College of Arts and Sciences offers the general education and basic science courses that a student must complete before he or she can be accepted into a professional program. Competitive students may be accepted into these programs after completing 60-90 hours of course work, depending on the health profession. Students whose goal is admission to a

professional program in the allied health professions should consult with a pre-health adviser in the Office of Life Sciences and Pre-health Advising, located in room 213 Life Sciences East for information regarding the specific requirements of particular programs and schools.

Clinical Laboratory Science. See "Department of Microbiology and Molecular Genetics."

Pre-Law Preparation. Law schools have no single preference for a specific undergraduate major. Admission to law school is primarily based on a strong record achieved in a rigorous undergraduate program and a competitive score on the Law School Admission Test (LSAT). Other admission considerations include course of study and difficulty of curriculum; letters of recommendation; work and leadership experiences; and applicant's background and motivation as revealed in an application essay.

Law school admissions officers most frequently recommend students include in their undergraduate programs courses which develop strong reading, writing and critical thinking skills as these verbal and analytical abilities are particularly critical for success in law school.

Personal assistance in selecting an academic major, planning a solid pre-law curriculum, preparing and registering for the Law School Admissions Test and applying to law school is available through the pre-law adviser in Student Academic Services.

Graduation Requirements

General Education Requirements. The General Education Requirements for the degrees offered by the College are shown for each program in *Undergraduate Programs and Requirements*. At least 40 credit hours of General Education are required for all degrees.

All degrees include a common core of 12 credit hours. *Three credit hours of American history and three hours of American government* are required. These must be satisfied by HIST 1103, 1483 or 1493, and POLS 1113. *Six credit hours of English composition* is a University requirement, and this must be satisfied by ENGL 1113 or 1313 and 1213 or 1413. Students who obtain a grade of "A" or "B" in ENGL 1113 may substitute ENGL 3323 for ENGL 1213 with permission of their departments.

The remaining 28 credit hours must be distributed as follows: six hours of analytical and quantitative thought, six hours of humanities, eight hours of natural sciences, six hours of social sciences, and two hours of General Education elective.

College Requirements. In addition to the 40 hours of general education, the college requires one credit hour of orientation, (A&S 1111), for all degrees. For the BS, nine additional hours of natural or mathematical sciences are required, as well as three additional hours from the arts and humanities. For the BA, nine additional hours of arts and humanities are required, as well as three additional hours of natural or mathematical sciences and a course focused on non-Western culture. College requirements define the BA or BS degree in the College of Arts and Sciences.

Foreign Language Proficiency Requirement. The foreign language requirement for the BA may be satisfied by 10 hours of college credit in the same language, or equivalent proficiency (e.g., passing an advanced standing exam or completing a second-year or higher college-level course in the language; etc.). RUSS 3053, 3123, 4113, and 4223 do not satisfy this requirement.

The foreign language requirement for the BS, BM, and BFA degrees may be met by presenting a high school transcript that demonstrates successful completion of two years of study in a single foreign language. It may also be satisfied by any of the options listed above for the BA.

Non-Western Requirement (BA and BFA only). One three-hour course in Non-Western studies from: A&S 2000 (Intro to African Studies), ANTH 3443, 4223; ART 3693, 4603, 4653, 4663, 4673, 4683; ECON 4643; ENGL 3173, 3183; FLL 3500 (Japanese only); GEOG 3053, 3753, 3763, 3783; HIST 1713, 3013, 3053, 3203, 3403, 3413, 3423, 3433, 3503, 3513, 3523, 3543, 3553; JAPN 1225, 2113, 2223; MUSI 3583; PHIL 3943; POLS 3053, 3223, 3233, 3313; REL 3573, 3613, 4113; RUSS 3053; SOC 4533, 4950 (Gender in the Middle East).

Diversity Requirement (all degrees). One course which emphasizes one or more socially constructed groups (e.g. racial, ethnic, religious, gender, age, disability, sexual orientation) in the United States. Courses satisfying this requirement are designated "D" in the *Catalog* and a list is available from the Office of Arts and Sciences Student Academic Services or on the SIS Internet site.

International Dimension Requirement (all degrees). One course which fosters understanding of, or the ability to communicate with, peoples and cultures of other countries. Courses satisfying this requirement are designated "I" in the *Catalog* and a list is available from the Office of Arts and Sciences Student Academic Services or on the SIS Internet site.

Scientific Investigation Requirement (all degrees). One course including an investigative laboratory that provides experience with scientific method. Courses satisfying this requirement are designated "L" in the *Catalog* and a list is available from the Office of Arts and Sciences Student Academic Services or on the SIS Internet site.

The non-western, international dimension, and scientific investigation requirements may be satisfied by courses used also to satisfy any other part of a student's degree program (i.e., in General Education, College, Major, or Electives requirements). No additional hours are required.

Additional College Requirements. For all degrees, six hours of general education designated courses (excluding courses in the major prefix) are to be taken at the 3000 level or above.

Major Requirements. At least 40 semester credit hours as specified by the department, including courses in the major and in supporting fields, must be completed.

Upper-Division Credit. A student must successfully complete at least 48 semester hours of upper-division credit, i.e. credit in courses at the 3000 or 4000 level.

Hours in One Prefix. If a student seeking a BA or BS degree takes more than 48 semester credit hours in one subject, including lower-division and upper-division credit, the hours in excess of 48 will be added to the minimum total hours required for the degree.

This "48 hour maximum" applies to all courses taken in a subject, whether they are required or elective, with the exception of required courses in English composition and American history and government.

Total Semester Credit Hours and Grade-point Average. The minimum number of semester credit hours for an Arts and Sciences degree is 120. The minimum grade-point average is 2.00 and must be earned in all major courses, in Major Requirements, and in all courses applied toward the degree. A minimum cumulative grade-point average of 2.00, as calculated for graduation purposes, is also required. (See "University Academic Regulations" in the *Catalog*.)

Particular degree programs may specify higher grade-point requirements or exceed the 120 hour minimum. Details are given in the *Undergraduate Programs and Requirements* publication, available online at registrar.okstate.edu.

Endorsement of Student's Plan (Graduation Check). Immediately after their last enrollment, and before their last semester, students should check with their advisers to be certain a degree plan has been sent to the Arts and Sciences Office of Student Academic Services.

Changes in Degree Plan. Once a degree plan has been submitted, a student will not graduate until all requirements on it have been fulfilled. Any deviation in the plan must be recommended by the adviser and submitted by email to the Graduation Certification staff in the Arts and Sciences Office of Student Academic Services for approval.

Checklist of Graduation Requirements.

- Total hours.** Minimum 120 (see degree sheet). Hours of "F" or "I," or in repeated courses (unless allowed in course descriptions in the *Catalog*), do not apply. Zero-level courses and all athletic participation and leisure activity courses are not applicable to a degree. Students must confirm grade changes for the removal of "I's" have been sent to the Office of the Registrar by the instructor who gave the "I."
- Grade-point average.** See individual degree sheets for all grade-point minima: overall, in major prefix courses, and in major requirements.
- Validity of credits.**
 - No more than two courses from the same prefix may be used to meet each of the following General Education (GE) and College/Departmental (C/D) combinations: GE Analytical and Quantitative Thought (A) and Natural Sciences (N) combined with C/D Natural and Mathematical Sciences (except MATH, three courses permitted); and GE Humanities (H) combined with C/D Arts and Humanities.

The General Education Controlled Elective does not count against the two-course maximum. Three hours of MUSI or TH may substitute for one three-hour course.

 - A course used in the Major Requirements may not be used to satisfy any other degree requirement, except the diversity, international dimension, scientific investigation, upper-division general education, and non-Western requirements.
 - Pass-No Pass Grading System. Courses taken on this campus under the Pass-No Pass Grading System (see "University Academic Regulations") may be used only as elective hours. They cannot satisfy any other requirement (General Education, Departmental, Major Requirement, and certification).

4. All degree requirements listed above and specified in "University Academic Regulations" and *Undergraduate Programs and Requirements* must be satisfied.
5. *Exemption*. A student who believes he or she has a valid reason for exemption from a College requirement should file a written request that has been approved by his or her adviser with the director of Student Academic Services.

Departmental Clubs and Honor Societies

Advertising Club
 Alpha Delta Sigma (advertising honor society)
 Alpha Epsilon Delta (health pre-professional honor society)
 Alpha Epsilon Rho (national broadcast society)
 Alpha Kappa Delta (sociology honor society)
 American Association of Petroleum Geologists Student Chapter
 American Choral Directors Association
 American Institute of Graphic Arts Student Chapter
 American Medical Student Association
 American Student Dental Association
 Army Blades
 Arnold Air Society
 Art Association
 Art History Organization
 Arts and Sciences Student Council
 Association for Computing Machinery
 Association for Women in Communications
 Association for Women in Sports Media
 Association of Women in Geoscience
 Beta Beta Beta (national biological sciences honor society)
 Botanical Society
 Claude Rains Appreciation Society (film society)
 Collegiate Music Educators National Conference
 Creative Writers Association
 Delta Nu Alpha (biochemistry club)
 ECO-OSU
 English Club
 English Graduate Student Association
 Forum of Geography Graduate Students
 French Club
 Friends of the Forms (philosophy)
 Gamers of OSU
 Gamma Theta Upsilon (geography)
 Geographic Information Systems Club
 Geography Club
 Geological Society of OSU
 Geology Graduate Student Association
 German Club
 History Club
 Kappa Kappa Psi (band honor society)
 Kappa Tau Alpha (journalism and mass communication honor society)
 KXZY (broadcasting)
 Latin Dancing and Cultural Club
 Mathematics Graduate Student Society
 Medieval Studies Group
 Microbiology and Molecular Genetics Graduate Student Association
 Microbiology Club
 Music Student Advisory Council
 National Broadcasting Society/Alpha Epsilon Rho
 National Society of Pershing Rifles
 National Student Speech Language Hearing Association
 Oklahoma State Anime Society
 Oklahoma State Secular Society
 Oklahoma Student Chapter of the American Fisheries Society
 Opera Performance Educational Resource Association
 Papyrus (publication society)
 Pershing Rifles (military science honor society)
 Phi Alpha Delta (pre-law)
 Phi Alpha Theta (history honor society)
 Phi Lambda Upsilon (chemistry honor society)
 Phi Mu Alpha Sinfonia (music)
 Phi Sigma Tau (philosophy honor society)
 Pi Alpha Nu (religious studies)
 Pi Mu Epsilon (mathematics)
 Pi Sigma Alpha (political science honor society)
 Pre-Health Professions Club (chiropractic, pharmacy, occupational and physical therapy, nursing, radiologic technology)

Pre-Optometry Student Association
 Pre-Physician Assistant Club
 Pi Sigma Alpha (political science honor society)
 Psi Chi Honorary (psychology honor society)
 Psychology Club
 Psychology Graduate Student Association
 Public Relations Student Society of America
 Quiz Bowl Team
 Ranger Challenge (Division I equivalent military skills competition)
 Russian Club
 Sigma Alpha Iota (music)
 Sigma Delta Pi (Spanish honor society)
 Sigma Gamma Epsilon (Geology honor society)
 SMSC Ambassadors
 Society of Physics Students
 Society of Professional Journalists
 Sociology Club
 Sociology Graduate Student Association
 Spanish Club
 Sports Media Club
 Statistics Club
 Student Art Association
 Tau Beta Sigma (band honor society)
 TESL-Linguistics Association
 Theatre Council
 Wildlife Society - Student Chapter
 Zoology Graduate Student Society

American Studies

Laura Belmonte, PhD, *Professor and Director*

American Studies offers a systematic understanding of the culture and society of the United States of America from a multidisciplinary perspective. Students examine American beliefs, behaviors, symbols, and material objects in a wide variety of institutional and cultural locations.

Our curriculum combines structure with latitude in course selection. In addition to two required courses in American Studies, students gain a foundation in American literature and history. Additional courses are selected in the fine arts, humanities and social sciences.

Work in American Studies can lead to and enrich a wide variety of careers. Many of our graduates have gone into journalism, radio, TV and film work, museum curating, law, public relations, editing, advertising, government service, secondary school teaching and administration, and creative writing. With additional education, a significant number of American Studies majors have gone on to become scholars at the college and university level or into professional careers in law and public diplomacy.

Art

Chris Ramsay, MFA, *Professor and Head*

The Department of Art provides courses for students interested in: (1) a strong general education background, (2) major concentrations in studio art, graphic design and art history, (3) minors in studio art and art history.

Two degrees are offered in art: Bachelor of Art (BA) with options in art history and studio art that can be combined with teacher certification; and the Bachelor of Fine Arts (BFA), a professional degree with options in studio art or graphic design. Fields of concentration are available in drawing, oil and watercolor painting, printmaking, graphic design, illustration, electronic media, ceramics, jewelry/metalsmithing, sculpture and art history.

Art majors must attain grade-point averages of 2.50 for a BA in Studio, 3.0 for a BA in Art History, 2.75 for BFA in Studio or Graphic Design in art courses, in order to qualify for licensure and graduation.

Students wishing to major in graphic design must have a minimum overall GPA of 2.75 to enroll in 2000 level graphic design courses. Three 2000 level courses are prerequisite for a portfolio review scheduled for the latter portion of each spring semester. Students wishing to transfer into the graphic design program with earned credit in these courses are subject to the same review and must submit portfolio materials with application for admission into the program no later than April 1. This portfolio review determines those students qualified to proceed to 3000 level graphic design courses.

Because of a large endowment, the department is able to offer substantial scholarships at all levels, freshman through senior.

The Department of Art maintains an exhibition gallery, the Gardiner Art Gallery in the Bartlett Center for the Visual Arts, with approximately 200 linear feet of

exhibition space and 2600 square feet of floor space. Works by artists of national and international reputation, faculty and student works and cultural artifacts are shown.

Biochemistry and Molecular Biology

Gary A. Thompson, PhD, *Professor and Head*

Biochemistry, the central scientific discipline linking the chemical, physical and biological sciences, exerts a profound influence on the progress of medicine and agriculture. By applying concepts and methods of chemistry and physics to the fundamental problems of biology, biochemists have made great progress in their effort to understand the chemistry of living organisms. Major discoveries concerning the biochemistry of genetic material provide the tools of molecular biology that are essential to contemporary life sciences research.

Biochemists and molecular biologists are concerned with living things and thus, must be fluent in the concepts of the biological sciences. Since a biochemist's tools are the physical sciences, he or she must receive sound education in mathematics, physics and chemistry. Our academic programs are designed to integrate these disciplines, preparing students for a wide range for professional careers.

Challenging positions for well-trained biochemists and molecular biologists are available in colleges and universities, state and federal laboratories, research institutes, medical centers and in an increasing number of industrial organizations, particularly the pharmaceutical and food industries. Biochemists are involved with research on the chemistry of processes occurring in plants, animals, and various microorganisms, and with the discovery and development of antibiotics, vitamins, hormones, enzymes, insecticides and molecular genetics techniques.

The Department of Biochemistry and Molecular Biology offers a BS degree in biochemistry through the College of Arts and Sciences and a BS degree in biochemistry and molecular biology through the College of Agricultural Sciences and Natural Resources. An honors program is available. The curriculum provides a broad background in chemistry and biological science and permits flexibility in meeting particular interests of the student. Courses in biochemistry are based on general, organic and analytical chemistry. The biochemistry and molecular biology curriculum provides students with sufficient background in the basic sciences of mathematics, physics, chemistry and biology to meet the needs for graduate study in most scientific and professional fields. The curriculum is excellent for pre-professional students of medicine, dentistry, pharmacy, and veterinary medicine. The department's research activities provide opportunities for part-time employment of undergraduate majors to improve their professional competence.

Graduate Programs

Because many of the opportunities in biochemistry require advanced course work, a major part of the program in the Department of Biochemistry and Molecular Biology is concerned with its graduate program leading to the MS or PhD degree. This graduate program is an integral part of the basic research activities in the Oklahoma Agricultural Experiment Station.

Prerequisites. Although the BS in chemistry or biochemistry is preferred, students with strong backgrounds in other biological or physical science disciplines are eligible. Individuals should have the equivalent of one semester each of analytical and physical (biophysical) chemistry and two semesters each of general chemistry, organic chemistry and biochemistry. Also, a year of college physics and calculus is required. The results of the three general GRE exams (verbal, quantitative, analytical) are required for entrance. An advanced GRE subject matter exam (biochemistry, chemistry or biology) is also recommended. A GRE score of 500 verbal, 650 quantitative and 4.0 analytical is normally required. One year of a foreign language at the college level is required for the PhD degree program.

Degree Requirements. A more detailed description of the graduate study program in biochemistry is available from the department upon request. The requirements listed below complement the general graduate requirements described in the "Graduate College" section of the *Catalog*. Continuous attendance and participation in the departmental seminar is expected.

The Master of Science Degree. Twenty-four credit hours of formal graduate courses are required, including BIOC 5002, 5753, 5824, 5853, and 5930 (2 credit hours). In addition, a student must take two advanced (BIOC 6000-level) Biochemistry and Molecular Biology courses, present an acceptable research thesis (six hours) and pass a final oral examination covering it and related material. Research advisers are selected at the end of the first semester.

A non-thesis Master of Science degree is also available. It does not require a research thesis, but requires a report and extensive technical training in the laboratory. The non-thesis MS is not recommended for students wishing to pursue a PhD later.

The Doctor of Philosophy Degree. The course requirements are determined with the assistance and approval of the student's advisory committee. Usually they follow these guidelines: total of 30-40 credit hours of formal graduate course work which includes all the courses listed for the MS degree, BIOC 6740, and at least four of the advanced graduate courses in biochemistry (6000 level). Additional course requirements, appropriate to the student's interests, are determined by the advisory committee. The advisory committee is selected at the end of the second semester. Each student will successfully pass the preliminary examination in January of his or her third semester.

The student must present, and defend in a final oral examination, an acceptable research thesis which contains a substantial original contribution to the field of biochemistry and molecular biology. The department offers research experience in a variety of areas of biochemistry and molecular biology.

Review Process for Admission. The Office of the Associate Dean of Graduate Studies manages all procedures and records pertinent to admission. The admission process is ongoing with admission recommendations rendered by the graduate faculty in agricultural communications and agricultural education. To be eligible for committee review, each applicant must submit an application for admission to the Graduate College, transcripts of all academic records, three reference letters, resume, statement of purpose and GRE scores.

Botany

Linda Watson, PhD, *Professor and Head*

Plants continue to fascinate biologists, as they regulate global processes, form complex relationships with other organisms, and have intriguing patterns of development and diversity. Plants provide medicinal compounds, shelter, fuel, food, and oxygen, and support the existence of life on Earth. It is important that plants be thoroughly understood with survival and ecological balance depending upon this knowledge. As populations increase, the need for more and better supplies of food, fiber, and biofuels also increases. The study of botany underlies several applied sciences such as agronomy, forestry, natural resource management, horticulture, and plant pathology.

To major in botany a student should have a strong interest in science with a good background in chemistry and mathematics. Majors with a BS degree are qualified to hold positions in federal and state agencies in areas such as conservation biology, habitat restoration, environmental biology, and plant inspection. They may be qualified for various research positions in private industry involving plants, such as plant biotechnology and drug development, and may qualify for secondary school science teaching licensure.

Facilities used in undergraduate teaching include well-equipped plant physiology and ecology laboratories, environmental chambers, the 160-acre McPherson Preserve, and a herbarium with over 150,000 plant specimens. Faculty members teach and do research in their specialty areas of plant ecology, biodiversity, evolution, physiology, taxonomy and systematics, genetics and development, algal ecology, and cell and molecular biology.

Graduate Programs

Programs of research and study leading to the degrees of Master of Science and Doctor of Philosophy are offered in many areas of botany, including plant cell biology, ecology, evolution, physiology, taxonomy and systematics, population biology, genetics and development, and biotechnology-related areas.

Prerequisites. Applicants for admission must have received a baccalaureate degree from an accredited college and should have had 40 semester hours (or equivalent) in upper-division courses in the biological and physical sciences. A grade-point average of 3.00 (on a 4.00 scale) or above is required for unconditional admission. All applicants are required to submit scores for the Aptitude portion of the Graduate Record Examination.

Prerequisites for graduate degrees include successful completion of courses in the two broad areas of 1) ecology and evolution, and 2) cell and molecular biology. Students with an undergraduate major in biology or plant science will have completed a substantial portion of these courses; those with a less closely related major may be required to take some background courses. Final authority for each student's plan of study resides with the student's advisory committee.

Degree Requirements. Demonstrated research competence through submission and acceptance of a thesis or dissertation is required for all botany graduate degrees. A minimum of one semester teaching experience is required of all MS and PhD candidates. This requirement may also be satisfied by enrollment in a college teaching practicum course (GRAD 5990).

All graduate students are expected to attend and participate in departmental seminars.

The Master of Science Degree. Plans of study must contain 30 credit hours including at least 21 semester credit hours numbered 5000 or above, and at least six credit hours of thesis and two credit hours of seminar. A minimum of three graduate courses must be taken.

The Doctor of Philosophy Degree in Plant Science. The Department of Botany is one of seven departments participating in the multidisciplinary PhD in plant science program. Students in this program have great flexibility in research and course work. The student who chooses botany as a home department has a botany faculty adviser from within the department and will take BOT 6000 research hours in the department. To receive the PhD in plant science, students must enroll in a total of 90 credit hours beyond the BS or 60 credit hours beyond the MS. No fewer than 36 or more than 60 hours of BOT 6000 are allowed in the plan of study. Two hours of seminar (BOT 5850) must also be included in the plan of study. Students may choose as a specialization area either cellular and molecular, organismal, or ecological plant science. After a PhD candidate has completed most of the course work, qualifying examinations are scheduled that cover major areas of the student's plan of study and relevant subdisciplines of plant science.

Chemistry

Frank Blum, PhD, *Professor, Harrison I. Bartlett Chair, and Chair*

Chemistry is the science that deals with the composition, structure and interactions of matter. Materials obtained from the earth, such as ores, petroleum and natural gas, as well as those from plants and animals, such as food, fibers and medicines, are all studied and modified through chemical means. From natural materials, chemists create new and useful substances that enhance life. Chemists develop new drugs to fight disease, new agents to combat pests that destroy crops, and new materials for structures or electronics. Chemists are at the forefront in advancing new technologies to solve problems involving human and animal health, the environment, energy alternatives and conservation, new materials, detection of hazardous substances and crime scene investigations.

A student considering a career in chemistry should have a strong curiosity about natural phenomena, good problem solving skills and an above average work ethic. The student should want to learn more about the changes that take place in materials and to use this knowledge for the betterment of humankind. Interest and ability in mathematics and physics are also helpful since these subjects are basic to the study of chemistry.

Chemists are employed in industry, government, and education. In industry, jobs range from highly focused problem solving and product development to quality control, environmental testing and even sales. A great deal of industrial research is devoted to food and drug production as well as new energy sources, materials and detection devices. State and federal agencies also employ chemists for basic research and analysis. Finally, many chemists become teachers in high schools, colleges, and universities. In addition to teaching classes, many college and university faculty members train students to do research in their laboratories. Generally, an MS or PhD degree is required for those interested in research or college level teaching.

The Department of Chemistry offers two bachelor's degrees: (1) a BS degree that is accredited by the American Chemical Society; and (2) a BS degree that requires less specialization.

Our chemical laboratories are modern and well-equipped with instruments for the determination of chemical properties, the study of chemical reactions and the detection and structure elucidation of small quantities of materials. Undergraduate research is encouraged as part of the chemistry curriculum.

Graduate Programs

Prerequisites. Students entering this program should have at least eight semester credit hours (or the equivalent) in general, analytical, organic, and physical chemistry. The physical chemistry should have been based on mathematics through calculus.

Admission Requirements. For admission, a grade-point average of 3.00 or better is generally required. Deserving applicants with grade-point averages less than 3.00 are occasionally admitted under probationary conditions. Additional support of the application is sought in the form of three letters of recommendation. Graduate Record Examination scores are not required. Recommendations on admission to the Graduate College are made on behalf of the applicant by the departmental admission officer. Acceptance by a permanent adviser is not a prerequisite for admission to the program.

Degree Requirements. A more detailed description of the graduate study program in chemistry is available in a brochure supplied by the department upon request, or on the Internet at www.chem.okstate.edu. The requirements set forth below complement the general requirements stated in the "Graduate College"

section of the *OSU Catalog*. Attendance and participation in the departmental colloquia are required.

The Master of Science Degree. Students must complete at least 30 credit hours of graduate course work in chemistry or related fields.

Each student must present an acceptable thesis dealing with a research problem and pass a final oral examination covering it and related material. Research on the thesis problem should be started as early as possible in the graduate program.

The Doctor of Philosophy Degree. Work is offered which leads to the degree with a focus in analytical, biological, environmental, inorganic, materials, medicinal, nanotechnology, organic physical, polymer or theoretical chemistry or chemical education. The student must pass a qualifying examination in his or her field of specialization.

An acceptable dissertation must be presented which contains a substantial original contribution to the field of chemistry. The student must pass a final oral examination covering the dissertation and related material.

The Doctor of Philosophy degree requires the completion of at least 90 semester credit hours of work beyond the bachelor's degree.

The course requirements are determined by the student and his/her advisory committee consistent with departmental requirements.

Communication Sciences and Disorders

Larry L. Mullins, PhD, *Professor and Interim Head*

The Department of Communication Sciences and Disorders offers Bachelor of Science and Master of Science degrees in Speech-Language Pathology. The undergraduate program focuses on the scientific study of normal and disordered communication processes. Emphasis is placed on developing background knowledge in phonetics, speech and language development, anatomy and physiology, speech science, and the neurogenic basis of communication. During the senior year, students are introduced to a variety of communication disorders in preparation for the Master of Science degree. All students participate in 25 hours of applied clinical observation.

Graduate Programs

The Master of Science degree program is designed to provide students with intensive course work in the various communication disorders and with a wide variety of challenging clinical rotations both on and off campus. Research opportunities are available under the direction of the graduate faculty. Graduates are prepared to take positions in hospitals, community speech and hearing centers, private practices, schools and other related settings, and to pursue additional graduate education at the doctoral level. All graduates meet the academic and clinical requirements for the Certificate of Clinical Competence in Speech-Language Pathology from the American Speech-Language-Hearing Association, and the Oklahoma license in Speech-Language Pathology. Additionally, most students elect to earn the state teaching certificate required to practice speech-language pathology in the Oklahoma school system. The program holds national accreditation from the Council on Academic Accreditation of the American Speech-Language-Hearing Association.

Prerequisites. Admission to the graduate program requires a bachelor's degree in Communication Sciences and Disorders, or an out-of-field bachelors degree plus 24 hours of prerequisite course work.

Admission Requirements. Applicants for unconditional admission should have a minimum grade-point average of 3.00 in the major, strong letters of recommendation from those familiar with the student's previous academic background, a minimum combined verbal and quantitative GRE score of 900, a minimum verbal GRE score of 450, and a minimum analytical writing score of 3.5. Students not meeting the above requirements may be admitted on a provisional basis. Admission is competitive, and all application materials must be received by February 15, 2010 for fall 2010 admission. Completed applications must include: an online application, GRE scores, three letters of recommendation, transcripts from all undergraduate institutions, and a personal statement indicating why you desire to be a speech-language pathologist.

International students follow the same application procedure as U.S. students with one addition. If English is not the student's native language he or she is required to score a minimum of 550 on the Test of English as a Foreign Language (TOEFL) and a minimum of 60 on the Test of Spoken English (TSE). It is especially important that students have readily intelligible spoken English, because they will be conducting therapy sessions in English. The International Student Services Office is available on campus to assist international students.

Financial Aid. All students are eligible to apply for graduate assistantships and fee waiver scholarships. Graduate assistants qualify for out-of-state tuition.

Program Requirements. Requirements for the Master of Science degree include 36 credit hours of academic course, 2-6 hours of portfolio or thesis, and 15 credit

hours of clinical practicum. The program typically can be completed in two academic years including one summer semester.

Examinations. Students enrolled in a thesis option complete a master's thesis under the direction of a member of the graduate faculty. Student enrolled in a non-thesis option complete an academic/clinical portfolio, and a comprehensive examination.

Computer Science

Subhash Kak, PhD, *Regents Professor and Head*

Computer science is concerned with theoretical and practical methods of storing, processing and communicating information by means of computers and computer networks. Professional computer scientists obtain a formal education through the BS, MS or PhD degrees and apply their knowledge to many diversified fields of science, engineering, business and communications. Computer science offers opportunities to both specialists and generalists.

In little more than three human generations, the computing field has evolved from one associated primarily with engineering and scientific calculations of only casual interest to the layperson, to a factor of significant influence in almost every aspect of modern life. Technical careers in computer architecture and software design, as well as applications in the business and scientific areas, require a thorough knowledge of the principles of computer science. In addition, most managers in any field require some familiarity with computers, not only to be able to understand them, but also to incorporate them into their own decision-making processes.

The department offers the full range of degree programs—BS, MS and PhD. All programs are offered in both Stillwater and Tulsa. To be admitted to the BS degree program the student must have minimum overall GPA of 2.0. The student must also have taken and maintained a 2.5 GPA for CS 1113, CS 2133 and MATH 2144, with no course grade less than "C."

CS majors whose semester GPA is below 2.0 or 2.5 for their major core courses will be placed on departmental academic probation, regardless of overall GPA. Students on CS departmental probation must complete a minimum of 9 hours at Oklahoma State University with a GPA of 2.5 or higher to have their probationary status removed. Students who are not able to have their CS probationary status removed following the completion of a minimum of 9 hours (or the entire semester's work, if more than 9 hours) will not be allowed to enroll again as an undergraduate major in CS regardless of their overall GPA.

A student who experiences a catastrophic event that plays a significant role in his or her being placed on CS academic probation has the right to appeal to the Head of the Computer Science Department. With a successful appeal, a student will be given a semester to raise his or her GPA to the minimum level both overall and/or in his or her core courses before any probationary action is taken.

Most BS and MS graduates obtain positions in industry. Approximately half of the PhD graduates take university teaching and research positions and half are employed in industry.

The Department of Computer Science has a variety of computing resources, including a Linux cluster, a lab of Linux workstations, and a graphics, gaming and media lab. The systems are available to Computer Science students, faculty and staff for both course assignments and research work. Graduate students have access to several research labs and a special projects room in the department.

Computers can be accessed through the OSU Information Technology Division. There are a number of personal computer labs located in various buildings on campus. Some of the residence halls have personal computer labs available. All of these labs have access to personal computer application software and all mainframe computers on campus, as well as Internet access. Both University and department computers can be accessed 24 hours a day.

Graduate Programs

The department offers degree programs leading to the Master of Science degree and to the Doctor of Philosophy degree. These programs are designed to prepare an individual to pursue a career in either an academic or an industrial setting. In addition to taking a prescribed set of core courses, a student must take sufficient courses in one specialized area. In addition to course work, a student must complete a thesis for an MS degree. A student must complete a dissertation in addition to course work for a PhD degree.

The core course requirement assures the student of breadth of knowledge in computer science; the freedom to choose an area and additional research assures the student of enough depth in some facets of computer science to be able to carry out independent investigations in those areas and put concepts and ideas learned to practical use.

For a master's degree, 30 hours of graduate credit, including a six-credit-hour thesis, are required. A master's degree student is required to pass an oral examination over the thesis and a comprehensive course work examination.

There is no foreign language requirement for the MS.

For the PhD, 60 credit hours beyond a master's degree or 90 hours beyond a bachelor's degree are required; there is also a non-thesis option that requires 36 hours of graduate credit. A dissertation of no more than 30 hours is required. The PhD dissertation must describe original research. PhD students must pass (at an appropriate level) written preliminary examinations in areas of specialization. In general, both academic and industrial positions exist for each PhD graduate.

The candidate's baccalaureate degree need not be in computer science in order to enter the MS program. Students with degrees in other areas may be admitted provisionally and required to take specified prerequisite courses.

Economics and Legal Studies in Business

James R. Fain, PhD, *Professor and Head*

See "*Economics and Legal Studies in Business*" in the "*Spears School of Business*" section for additional information.

Economics is a science of choice. The study of economics centers on individuals' attempts to improve their living standards. It provides a comprehensive view of how a society is organized to transform the limited resources available into want-satisfying goods and services. It investigates the principles underlying the operation of the economic system and seeks to determine its weaknesses and to prescribe policy measures that will improve its operation. In the process, economics ranges over a host of the most important problems confronting contemporary society—the causes of and remedies for depression and inflation, the determinants of and methods for improving income distribution, poverty problems and welfare measures, the role of the government in economic activity, the requisites for economic growth and development, pollution and congestion and their control.

The primary objectives sought in the undergraduate curriculum are to develop a broad understanding and perspective of the economic aspects of people's activities, coupled with thorough training in the fundamental tools of economic analyses. Toward these ends is the development of elementary mathematical and statistical skills and complementary study in the social and behavioral sciences.

A major in economics prepares students for positions with business firms, non-profit private organizations and government agencies—both national and international. It provides an excellent background for the study of law. An international economic relations option is also offered. A degree option in business economics and quantitative studies is offered through the Spears School of Business to provide additional training in analytical methods and communication skills for both public and private sector occupations. A student interested in pursuing graduate studies in Economics should include a wide range of math courses in their undergraduate curriculum.

Graduate Programs

The department offers programs leading to the Master of Science degree and the Doctor of Philosophy degree. The graduate program in economics prepares economists for academic careers as well as research and administrative positions in business and government agencies.

Graduate fields of specialization include regional and urban economics, international economics, and economic development. In addition, graduate courses are offered in labor, environmental economics, and econometrics. Admission to a graduate program is determined by an elected graduate studies committee on the basis of the applicant's previous academic record; verbal, quantitative and analytical scores of the Graduate Record Examination; and letters of recommendation.

The Master of Science Degree. Admission to the master's program in economics is granted to college graduates with superior academic records. Students must have an undergraduate economics degree, be well grounded in economic theory, and have an excellent mathematical background. A total of 30-33 graduate credits are required to earn an MS in economics.

Each graduate student is guided in the preparation of a plan of study by the graduate program director. At the master's level there are two options: one provides the student with a well-rounded program that prepares the student for the doctoral program in economics or further graduate study in another related discipline. The second option is applied economics which stresses communication skills, quantitative analysis and course work from other disciplines related to a career objective.

The candidate for the master's degree is required to show competence in basic economic theory and statistical methods, together with an understanding of the fundamental institutional operations of the United States economy.

A research report or thesis is required of all students who take only the MS degree. A foreign language is not required.

The Doctor of Philosophy Degree. Admission to the doctoral program in economics is granted to college graduates who have superior academic records.

A total of 60 graduate credits are required to earn a PhD with a previous earned MS degree. A total of 90 graduate credits are required to earn a PhD without a previously earned MS.

This program stresses balanced preparation in economic theory and in mathematics and statistics, as well as competence in subject-area fields of specialization. The student is required to pass qualifying examinations in the theory core and in one field of specialization. (The theory core is not considered a field of specialization.) Competence must be demonstrated in a second field of specialization, through course work. The graduate program director helps the student develop a plan of study to achieve these objectives. A foreign language is not required.

A dissertation based upon original research is required of the candidate for a PhD degree in economics. The final oral examination is the dissertation defense.

English

Carol L. Moder, PhD, *Professor and Head*

The study of English literature and language, as well as film and other media, is fundamental to any education. Not only does it provide familiarity with the literary works and media that shape cultural heritage, but it also develops the abilities to think analytically, to speak and write effectively, and to consider various points of view when dealing with people and ideas.

The Department of English prides itself on the diversity of its course offerings and on its small lecture and discussion classes. The BA, MA, MFA and PhD degrees are awarded through the department and a full range of courses are offered in seven areas: literature, creative writing, screen studies, linguistics, teaching English as a second language, rhetoric, and professional writing. The number of students in any English class rarely exceeds 30; and in a writing class, including freshman-level classes, the enrollment limits range from 18 to 19. The maximum number of students in a graduate-level class is 10.

An undergraduate English major has five options: a traditional English major, secondary education teaching certification, creative writing, screen studies, or professional writing, each of which emphasizes literature and writing in varying proportions. English majors may choose from courses in all historical periods of literature written in English from early to contemporary, and in all genres—novel, film, short story, poetry, and drama. Every literature course emphasizes literary appreciation and analysis and allows ample opportunity for discussion and writing. The student in the traditional major may also study fiction writing and poetry writing, with published writers. Also available are courses in linguistics, which is the study of language, and professional writing, which is writing for organizations. Screen studies courses emphasize criticism, history, and theory of film, television, and new media.

Many English majors pursue careers directly related to their major, such as those in professional writing or in teaching. An English major with a professional writing option would be well prepared to pursue a career as a writer, editor, publications manager, or information developer. Students who want to teach may earn secondary teaching certification in English through either the Department of English or the College of Education, or they may decide to go to graduate school in order to teach in a college or university. A great many English majors have found the teaching profession a rewarding and challenging one. Other students find that an English major is excellent preparation for law school because it develops the analytical and language skills attorneys use. But one need not have definite career goals to major in English. English majors regularly pursue careers not only in education, professional writing and law, but also in medicine, the ministry, publishing, government, and business. Professional schools and businesses value English majors both for their communication skills and for their ability to think critically.

The Department of English serves students other than those majoring in English. It offers a variety of writing courses to fulfill the University's composition requirements; and English courses in literature, professional writing, creative writing, and screen studies are very popular electives for students in all majors. Many students choose to complement their first major with a second major or minor in English.

The Department of English actively participates in the University Honors Program. Students who qualify for Honors are eligible to enroll in restricted courses and to write a Senior Honors Thesis. The department offers Honors courses at all levels, including an Honors seminar on a different topic each year.

A Bachelor of Arts in English requires 42 hours of lower- and upper-division English courses. An English minor requires 18 hours of English, at least nine of which must be upper-division. (These hours do not include Freshman Composition.)

Graduate Programs

The Department of English offers programs leading to the Master of Arts, Master of Fine Arts, and the Doctor of Philosophy. Master's students may choose among

four programs: Master of Arts in English; Master of Arts in professional writing; and Master of Arts in teaching English as a second language (TESL); and the Master of Fine Arts in Creative Writing. In consultation with their advisory committees, both master's and doctoral students have considerable flexibility in designing a degree that meets their own interests and professional goals. Students may take courses in creative writing, screen studies, professional writing, composition and rhetoric, TESL, linguistics, literary theory, and all periods of British and American literature. The diversity of choices and the flexibility of the program prepare students to meet the demands of a changing academic marketplace.

Admission Requirements. Students seeking admission to the graduate program in English must be accepted by the Graduate College and by the departmental admission committee. In addition to the application and transcripts required by the Graduate College, students must submit to the Department of English graduate coordinator a statement of purpose; letters of recommendation; and a writing sample or the Graduate Record Examination general and subject area scores. Non-native speakers of English must submit scores on all subtests of the TOEFL iBT or IELTS. For fall admission the early decision deadline is January 15; the final deadline is March 1. The deadline for spring admission is October 15. Prerequisites are listed under each degree below.

Teaching Opportunities. Depending on their levels of experience and areas of emphasis, graduate teaching assistants may tutor in the Writing Center, serve as discussion leaders for selected large lecture classes, or teach their own sections of freshman composition, composition for international students, technical writing, creative writing, screen studies, or literature. All teaching assistants are required to take an appropriate pedagogy course during their first year of teaching.

The Master of Arts Degree. The MA in English allows students to develop expertise in a variety of areas: literature written in English, creative writing, literary theory and criticism, screen studies, composition and rhetoric, professional writing, linguistics, and TESL. In consultation with their advisory committees, students devise an individualized curriculum that reflects their own intellectual interests and prepares them to enter a doctoral program or to teach at the college level. The degree programs in TESL and professional writing prepare teachers for the bilingual classroom and professional writers for industry.

Prerequisites include a baccalaureate degree with an English major, or at least 24 hours in English (excluding freshman composition). Successful applicants usually have a minimum grade-point average of 3.00 on a 4.00 scale, particularly in English courses.

The MA in English consists of 30 credit hours, including six hours of thesis. In addition to these hours, students must demonstrate reading knowledge of a foreign language, pass the MA qualifying examination, and pass an oral defense of the thesis. The thesis is a work of original research prepared with the guidance of the student's advisory committee. Creative writing students may present as their theses original works in poetry or prose fiction. The programs in professional writing and TESL have separate degree requirements described below.

Professional Writing. The MA option in professional writing consists of 30 credit hours (with thesis) or 33 credit hours (without thesis). In addition to these hours, students must fulfill the foreign language requirement and pass the MA qualifying examination in technical writing. Prerequisites are the same as those above.

TESL. The MA option in teaching English as a second language is designed to provide students with the skills necessary to teach English to non-native speakers in a variety of situations, e.g., teaching English as a foreign language in an overseas school, college or university; teaching English as a second language to international students studying in intensive English programs in the U.S.; or teaching English to bilingual and bicultural students in American public school systems and adult education programs.

Prerequisites are the same as those above except that the major may be either in English or in a field related to second language acquisition or teaching. In addition, applicants to the TESL program must have six hours in a foreign language with a grade of "B" or better, or must complete this requirement prior to taking the qualifying examination.

The TESL program consists of 30 credit hours (thesis option) or 34 credit hours (non-thesis option). In addition to these hours, students must pass the MA qualifying examinations in TESL.

TESL is especially relevant to the public school classroom as a result of recent legislation concerning bilingual education. Teachers in English and other areas of expertise will find this program especially useful. The Oklahoma State Board of Education recently approved an "optional certification" for English as a Second Language. Already certified teachers can obtain this certification upon passing the required standardized examination. Several of the courses offered for the

TESL option can prepare students for this examination, although the MA/TESL option degree does not confer certification.

Certificate in TESOL (Teaching English to Speakers of Other Languages).

The Certificate in TESOL is a program designed to provide students with the skills important for teaching English to non-native speakers in a variety of situations, including teaching English to bilingual/bicultural, English Language Learner (ELL) and Limited English Proficient (LEP) students in public school systems and adult education programs, teaching English as a Second Language to international students studying in English programs in the U.S., and teaching English as a Foreign Language in an overseas school, college, or university. The program consists of 12 credit hours, with three required courses and one elective course chosen from a group of courses offered by the Department of English.

Admission to the Certificate Program in TESOL requires a Bachelor of Arts or Bachelor of Science degree from an accredited institution of higher learning, a 3.0 GPA, two letters of recommendation, and , for non-native English speakers, appropriate scores on either the TOEFL iBT or IELTS.

The Master of Fine Arts Degree. The MFA in Creative Writing allows students to focus on developing their abilities as poets and/or fiction writers, through a course of study emphasizing creative writing workshops, literature seminars, and electives in either of those areas or other areas in language and culture. In consultation with their advisory committees, students devise an individualized curriculum that reflects their own artistic and intellectual interests and prepares them to publish their artistic writing, enter a PhD program, or teach at the college level.

The MFA in Creative Writing consists of 42 credit hours, including 12 hours of thesis. In addition to these hours, students must present their creative work at a public reading following the completion of their thesis.

Prerequisites include a baccalaureate degree with an English major, or at least 12 hours in English (excluding freshman composition) and writing sample of high quality. Successful applicants usually have a minimum grade-point average of 3.00 on a 4.00 scale, particularly in English courses.

The Doctor of Philosophy Degree. The Department of English grants one doctoral degree, the PhD in English. Students may, however, emphasize in their courses, their exams, and their dissertations a variety of areas: all periods of British and American literature, Native American literature and language, creative writing, literary theory and criticism, screen studies, rhetoric and professional writing, linguistics, and TESL. They may also choose an interdisciplinary emphasis. In consultation with their advisory committees, students devise an individualized curriculum that reflects their own intellectual interests and professional goals.

Prerequisites include a master's degree in English or a field related to the student's area of emphasis. Successful applicants usually have a minimum grade-point average of 3.50 on a 4.00 scale in their master's degrees. All PhD students are admitted provisionally and must take the first-year examination during their second semester of enrollment.

The PhD degree consists of 60 credit hours beyond the master's degree. Fifteen to 20 of these hours are devoted to the dissertation. In addition to these hours, students must take a first-year examination; demonstrate reading knowledge of two foreign languages or mastery of one language; pass the PhD qualifying examination in two areas; and pass an oral defense of the dissertation. The dissertation is a work of original research prepared under the direction of the dissertation committee. Creative Writing students may present as their dissertations original works in poetry or prose fiction.

Additional information and requirements may be found in the *English Graduate Guidelines*, which may be consulted online at english.okstate.edu.

Foreign Languages and Literatures

Perry J. Gethner, PhD, *Norris Professor and Head*

The Department of Foreign Languages and Literatures offers French, German, Russian and Spanish as major fields of study. Minors may be earned in French, German, ancient Greek, Japanese, Latin, Russian and Spanish, or an Area Studies program.

In all languages offered by the department, elementary courses are available for students with no previous experience. First and second-semester Spanish are offered in intensive form in the summer session. Students with previous foreign language experience may take placement tests to find the course best suited for their level of proficiency. A major in a foreign language is often supported by study of another language or work in other fields.

The study of foreign languages is a vital and humanizing part of a general education. In a rapidly changing and shrinking world, it offers new cultural insights, breaks down insularity, fosters discipline of thought and expression,

and leads to a better understanding of one's native language. Foreign language majors may expect to find openings in a wide variety of careers in law, medicine, government, industry and commerce, all of which require a liberal arts degree. Job opportunities are greatly enhanced for those who combine foreign language study with a major or minor in other disciplines. Moreover, there is a growing demand for foreign language teachers in secondary education. Bachelor of Arts candidates may qualify for teaching licensure without increasing the number of hours required for graduation.

In addition to the standard courses in language, literature and civilization for individual languages, the department offers literature-in-translation courses for general education, and courses in German for reading knowledge and Russian for reading knowledge.

Geography

Dale R. Lightfoot, PhD, *Professor and Head*

Geography is a diverse discipline concerned with the surface of the earth and its immediate atmosphere. Geographers study the similarities, the differences and interactions among phenomena in this region. Geographers are interested in the economic, social, political and environmental qualities of places, and in how these attributes interact.

Geographers attempt to understand human behavior by answering such questions as: Where do people work? Where do they play? Where do they live? Why do people make these locational choices? What are the consequences of these decisions and behavior?

Because the physical environment is important in many explanations of spatial behavior and spatial patterns, geographers have traditionally concerned themselves with relationships between humans and their environment. What impact do people have on the land? What impact does the land have on people? How do people perceive their environment? How does this perception influence their activities?

Finally, geographers examine spatial patterns and behaviors in specific regional contexts. These analyses occur at many levels—world-wide, national and local. These kinds of studies lead to suggestions for change and improvement—the application of geography to contemporary rural, urban and regional problems. Thus many aspects of urban, regional and national planning are geographic in nature.

No academic discipline has broader interests than does geography, and the Department of Geography allows students the flexibility to pursue studies that lead to a wide range of educational goals and careers. Students with interests in environment, planning, real estate, economic development, international affairs, travel, remote sensing, Geographic Information Systems, area studies, management or education are among those who can be accommodated. A geography minor program is also available for those who see geography as complementary to another field of study.

Those who wish to study geography tend to be interested in their own surroundings and in other places. They also possess a curiosity for maps, the basic tool of the field. Students of geography will become familiar with remote sensing, computer graphics, statistics, Geographic Information Systems and cartography—tools which facilitate geographic inquiry and analysis.

Many careers are available to the geography major or minor. Recent graduates have been employed in urban and regional planning, community development, locational analysis in both the public and private sector, resource planning and management, various forms of domestic and Foreign Service, cartography and teaching. Geography also provides an excellent foundation for a liberal education and is a good basis for a career in business, industry or government.

The department manages the Center for Applications of Remote Sensing, a palynology/paleoecology laboratory, a computer mapping facility, spatial database facility, field mapping equipment such as Global Positioning System receivers, an interactive weather analysis system with satellite data feed, and two ARC GIS equipped geographic information system laboratories. Two national journals are edited and published by faculty members in the department, the *Journal of Cultural Geography*, and the *Journal of Central Asian Studies*.

The department specializes in three areas: cultural and historical geography, resource management, and urban/transportation geography. Complementary course work supporting these specialized areas is available in other departments.

The Department of Geography offers the BA and BS degrees. An advanced program leading to the MS and PhD degrees is also available. The department also sponsors students in the interdisciplinary MS and PhD programs in environmental science.

Certificate in Geographic Information Systems (GIS). The certificate in GIS provides students with broad exposure to principles and applications of GIS. A

student who has earned the certificate is well-versed in general GIS theory and has knowledge and/or practical exposure to the following: (1) hardware and software used in GIS, (2) planning and construction of spatial and non-spatial databases, (3) GIS analyses (performed on data related to the student's area of interest), and (4) representation of data in both mapped and tabular form. Requirements for the certificate are designed to parallel skills needed by GIS professionals. Through elective courses, students focus on one of several areas of specialization. Admission into the certificate program is open to anyone enrolled as an undergraduate student, graduate student or special student at OSU. To receive a certificate in GIS, a student must complete 21 hours of course work in GIS and related topics and hold a bachelor's or more advanced degree from OSU or an accredited college. Students may work toward the certificate while completing their bachelor's or graduate degree.

Graduate Programs

The Department of Geography offers work leading to the MS and PhD degrees. These degree programs emphasize preparation for employment in positions which are enhanced by an ability to recognize and to interpret spatial distributions, and to analyze regions.

Particular emphasis is placed on the applied aspects of geography, with many graduates employed by private business as well as city, regional, state and national planning agencies. Recipients of graduate degrees in geography have also gone on to a variety of successful careers in various fields, including retail store location analysis, city planning, environmental assessment, and university teaching and research.

The Master of Science Degree. Admission to the master's program in geography is granted to college graduates with superior academic records. An undergraduate geography major is not required. Majors from the social, physical, and behavioral sciences and from the humanities are encouraged to apply. Incoming graduate students must demonstrate competency in cultural geography, physical geography, statistics, and cartography. If a student lacks these prerequisite skills, an additional course in each of these subjects is required.

Two basic plans of study exist for the master's degree. One plan requires a minimum of 30 credit hours, including a thesis; the other is a 36-credit-hour non-thesis option. Plans of study can be developed to accommodate many interests. Major faculty interests include resource management, cultural and historical geography, urban and transportation geography, regional analysis and development, and cultural and political ecology.

The Doctor of Philosophy Degree. Admission to the PhD program is granted to students with superior records in their previous graduate study. A previous degree in geography is not required, but incoming students from other disciplines must demonstrate competency in cultural geography, physical geography, statistics and cartography. If a student lacks these prerequisite skills, an additional course in each of these subjects is required. A minimum of 61 hours of graduate credit beyond the master's degree is required for the PhD degree. These hours include core courses (13 hours), elective courses in geography (21 hours minimum), elective courses outside of geography (12 hours minimum), and dissertation hours (15 hours minimum). Each student chooses an individual doctoral committee that advises the student in the formulation of an approved plan of study for the degree. Students focus their studies in one of three department specialty areas: cultural and historical geography, resource management, and urban/transportation geography. Candidates for the PhD in geography must demonstrate either (1) proficiency in one language other than English, (2) reading knowledge of two languages other than English, (3) proficiency in advanced quantitative methods, (4) proficiency in advanced qualitative methods, or (5) proficiency in a multi-skill track. To be advanced to doctoral candidacy, the student must demonstrate proficiency in three specialized subject areas within geography and related disciplines by passing written and oral comprehensive examinations. An important requirement for the PhD degree is the preparation and successful defense of a doctoral dissertation. The dissertation must demonstrate the candidate's ability to plan and complete independent, original research in geography.

Boone Pickens School of Geology

Jay M. Gregg, PhD, *V. Brown Monnett Chair of Petroleum Geology, Professor and Head*

Earth is the residence of the human race, therefore it is essential to develop a better understanding of the composition, internal and external processes that affect the Earth. Earth is an outdoor laboratory filled with opportunities to observe geologic processes in action. By applying knowledge of forces that shape Earth, geoscientists seek to reconstruct the past and anticipate the future. Geoscientists provide information to society for solving problems and establishing policy for resource management, environmental protection, and public health, safety and welfare.

Geology is concerned with the processes, the history, and the characteristics of the rocks and sediments that shape the Earth. Human activities, predominantly on or near the surface, have utilized rocks and rock products, mainly petroleum and metals, to contribute to the quality of life. Because the Earth is dynamic—that is, the land surface is constantly changing—knowledge of earthquakes, volcanoes, plate tectonics, floods and landslides, to name a few dynamic events, is critical to minimize human suffering and economic loss. Within geology, different specialties, such as petroleum geology, ground-water geology (hydrogeology), geomorphology (study of surface processes), structural geology, and paleontology (study of fossils), have developed.

The Boone Pickens School of Geology offers traditional academic program services, awards BS, MS and PhD degrees in geology and conducts various outreach programs. Geology majors are provided a quality education designed to develop leadership skills and enhance employment opportunities. The faculty of the Boone Pickens School of Geology conduct research in the areas of continental tectonics, conventional and unconventional energy resources, environmental issues, paleoclimatology, geophysics/remote sensing. In these areas, the school has already established a sound infrastructure—appropriate faculty appointments, laboratory and computer upgrades, and a sound record of productivity. Geology undergraduates are eligible for one of at least 10 available departmental scholarships, based on academic achievement and need. Teaching assistantships, research assistantships, and fellowships are available for qualifying geology graduate students.

Geologists are employed extensively in applied and pure research and in teaching. Applied research includes the exploration for, and development of, oil and gas fields, metallic and nonmetallic mineral deposits, and reservoirs of ground water. The geologist is well-prepared to pursue and direct environmental studies. Careers in research may be found with private employers, government agencies or universities. Teaching positions in geology are available at all levels, beginning with secondary education. As with most other sciences, more employment opportunities will be available to students with advanced training and a broad background. In general, careers as teachers in a college or university and in research are open only to those with graduate training.

Graduate Programs

Prerequisites. The student should have at least 30 credit hours in geology, including courses in physical geology, historical geology, mineralogy, petrology, sedimentology/stratigraphy, structural geology and field camp. Additional undergraduate requirements to enter the master's degree program include: two classes in chemistry or geochemistry, two classes in physics, math through calculus II, and one biology course. Deficiencies in course work must be made up by the student after entering the program. The Graduate Record Examination is recommended, but not required, for admission to the program.

The Master of Science Degree. The MS is awarded through the completion of a thesis. Each candidate must complete at least 30 semester credit hours of work beyond the prerequisites. As many as 12 of these may be taken in other departments of the University upon approval by the candidate's advisory committee. A final defense of the thesis and the research that it documents is required of all students.

The Doctor of Philosophy Degree. The PhD is awarded upon completion of a doctoral dissertation. A minimum of 60 credit-hours (course work and research hours) beyond the MS or MA degree are required for the PhD. Under normal circumstances, students must hold a master's degree in geology or a related field to be accepted into the PhD program. However, under exceptional circumstances, students may be accepted directly into the PhD program without a master's degree. Such students will be required to complete a total of 90 semester credit-hours (course work and research hours) to earn their degree. Such decisions are made by the entire faculty of the School of Geology, upon recommendation of the Graduate Adviser. To be admitted to candidacy, students must pass a written and oral qualifying exam, and successfully defend their dissertation research proposal and pass an associated comprehensive exam. The PhD is conferred after the successful defense of the dissertation.

Gender and Women's Studies

Carol Mason, PhD, *Associate Professor and Director*

Gender and Women's Studies is an interdisciplinary program offering a minor for undergraduates, support for curricular development and research by faculty, and opportunities to collaborate with community and campus partners who are intrigued by how gender shapes the world. Faculty and courses from twelve departments across the university contribute to the program.

The minor is offered through the College of Arts and Sciences, but is open to all undergraduates regardless of major. In addition to two required courses in Gender and Women's Studies (GWST 2113 or 2123; 4113), students choose from courses focusing on gender and women (9 hours), and from classes that complement gender and women's studies (6 hours).

Students in Gender and Women's Studies pursue research in the history of women, in theories of gender, in feminism, in the cultural construction of masculinity, and in the cross-cultural intersections of race, class, nationality, and sexuality. Work in Gender and Women's Studies can lead to and enrich a wide variety of careers, including nonprofit development, graduate training in humanities and the social sciences, education, curatorial administration, human resources, creative writing and reportage, international relations, publishing, public relations, electoral politics, and advocacy.

History

Michael F. Logan, PhD, *Professor and Head*

History is the record, explanation, and interpretation of the totality of human activities. The study of history is unique in its concern for the role of time in human development. History enhances the individual's knowledge of self and gives perspective and deeper meaning to contemporary events. Courses in the Department of History are intended to give the student a broad understanding of the evolution of civilizations, peoples, countries, and institutions, and an insight into the meaning of this evolution. They are also designed to prepare graduates for many types of employment.

Because history is basic to many special fields, the Department's instruction is designed to aid students interested in education, law, journalism, scientific and technical disciplines, public service, and business administration. Students in colleges other than the College of Arts and Sciences who wish to pursue the study of history are encouraged to enroll in courses of interest. The Department of History offers a number of courses that satisfy General Education requirements in the social sciences and the humanities. It participates actively in the Honors Program and offers to its majors the option of pursuing a special plan of study leading to a Departmental Honors certificate. The Department of History also participates actively in interdisciplinary minors and in the Women's Studies minor.

Graduate Programs

The Department of History offers programs leading to the MA and PhD in history. In addition to the general Graduate College requirements, the candidate for the Master of Arts or Doctor of Philosophy degree with a major in history is expected to have prerequisites of approximately 30 semester credit hours (including 18 upper-division hours) of undergraduate history courses, with an undergraduate grade-point average of at least 3.00.

The Master of Arts Degree. Admission to the master's program requires submission of scores for the verbal, quantitative, and analytical sections of the Graduate Record Examination. Candidates for the Master of Arts degree choose one of two alternative plans. Requirements common to both plans include completion of a course (HIST 5023) in historical methods of research and writing, several graduate seminars, and a two-hour oral examination at the end of the program. Students must maintain at least a 3.00 ("B") grade-point average. An advisory committee will be appointed for each student during the second semester of enrollment. The two plans are designed for different careers, and the distinctive requirements of each are summarized below:

Plan I—(This plan is recommended for those planning to continue graduate studies at the doctoral level.) Students must complete a minimum of 30 hours of graduate courses in two fields. These hours must include at least 12 hours of seminar offered by the department (including at least one research seminar), Historical Methods (HIST 5023), and six hours of thesis (HIST 5000). Students will take at least 12 hours in the major field and at least 9 in a minor field. With the consent of their advisory committee, student may take course at the graduate level in a related discipline.

Fields of study include:

- United States
- Europe
- World

Students must demonstrate satisfactory reading knowledge of one foreign language.

Plan II—(Students must be pursuing Public History.) Students must complete a minimum of 36 hours of graduate courses. These hours must include at least 3 hours of research seminar, 6 additional hours of seminar offered by the department (reading and/or research), Historical Methods (HIST 5023), Introduction to Public History (HIST 5033), an internship (HIST 5030), and 6 hours of thesis (HIST 5000). Normally, students will also take Museum Studies (HIST 5053) and/or Historic Preservation (HIST 5063). With the approval of the student's advisory committee, as many as 9 of these hours may be taken in related disciplines.

The Doctor of Philosophy Degree. Admission to the doctoral program requires a satisfactory score on the Graduate Record Examination. Each applicant must also meet Oklahoma State University requirements for the MA degree in history,

with preference for applicants having at least a 3.50 grade point average (on a 4.00 scale).

All doctoral students must take Historiography (HIST 6023) and Teaching History at the College Level (HIST 5021). Students without a MA thesis may be required to take Historical Methods (HIST 5023). All doctoral students must take at least twelve hours of seminar including at least three hours of research seminar. Course work to be completed will be indicated on a Plan of Study. In general, a minimum of sixty semester graduate credit hours beyond the MA degree is required, with a "B" average for all courses. Students with a general field in United States history should take reading seminars in United States history dealing with at least two of the following chronological eras: Early America, Nineteenth Century U.S., and Modern U.S.

The prospective doctoral student must prepare three fields for examination: a general field (at least twelve hours), a major field (at least twelve hours), and a minor field (at least nine hours). The minor field should be outside the geographic boundaries of the general field. With the consent of their advisory committee, students may apply graduate course work taken outside the History Department to their major field. Other major fields are possible with permission of the student's advisory committee.

United States
Pre-modern Europe to 1789
Modern Europe

Major fields (including but not limited to):

- United States West
- Native North America
- Science and Technology
- Religion
- Culture
- Gender
- Politics
- Modern U.S.
- Race and Ethnicity
- Environment
- Diplomatic
- Transnational

Minor fields.

- Europe
- United States
- World (Ancient, Middle East, Asia, or Latin America)
- Public History

Upon the recommendation of the departmental Director of Graduate Studies, a doctoral advisory committee is appointed by the Dean of the Graduate College. This committee consists of members of the graduate faculty (at least one from each of the examination fields), including the student's major advisor, who acts as a chairperson and must have status as a graduate faculty member with doctoral chaire privileges. An additional member of the committee must be a graduate faculty member from outside the department. The purpose of this committee is to develop a Plan of Study which will give direction to students' preparation for their qualifying examinations and supervise their dissertations.

No student is admitted to candidacy until he or she has (1) demonstrated a reading knowledge in at least one foreign language; (2) completed all course work on the plan of study; (3) completed with a grade of "B" or higher graduate courses in historical methods, historiography, and teaching history at the college level; (4) obtained approval of a proposed dissertation topic; and (5) passed comprehensive written and oral examinations in each of the areas of concentration.

Upon admission to candidacy, the student begins work on the dissertation. Supervised by the major adviser and members of the advisory committee, the dissertation provides the student an opportunity to do original research on a topic within the major area of study. The final dissertation must be submitted to the Graduate College in accordance with the regulations contained in the "Graduate College" section of the *Catalog*. Upon completion of the dissertation, the student undergoes a final examination. Oral in nature and no more than two hours in length, the examination is primarily a defense of the dissertation.

Liberal Studies

Thomas A. Wikle, PhD, *Director*

Liberal Studies degrees meet the needs of students who desire greater breadth in the major than typical degrees allow. By combining course work across several Arts and Sciences social sciences and humanities disciplines, students tailor their curriculum to unique academic and career goals.

The major requires 45 hours distributed across at least three Arts and Sciences disciplines. To ensure coherence among courses selected across disciplines, a

three semester hour senior project is required as a part of the major. The senior project is examined and approved by a panel of two faculty members who represent the disciplines in which the candidate concentrates course work.

Mathematics

Dale E. Alspach, PhD, *Professor and Head*

Contemporary mathematics is concerned with investigations into far-reaching extensions of such basic concepts as space and number and also with the formulation and analysis of mathematical models arising from varied fields of application. Mathematics has always had close relationships to the physical sciences and engineering. As the biological, social and management sciences have become increasingly quantitative, the mathematical sciences have moved in new directions to develop interrelationships with these subjects.

Mathematicians teach in high schools and colleges, do research and teach at universities, and work in industry, business and government. In industry, mathematicians usually work in research, although they have become increasingly involved in management. Firms employing large numbers of mathematicians are in the aerospace, communications, computer, defense, electronics, energy, finance, and insurance industries. In industry, a mathematician typically serves either in a consulting capacity, giving advice on mathematical problems to engineers and scientists, or as a member of a research team composed of specialists in several fields. Among the qualities which he or she should possess are breadth of interests and outlook, the ability to think abstractly and a keen interest in problem solving.

An undergraduate specializing in mathematics will begin with calculus or sometimes with college algebra and trigonometry. Well-prepared students are encouraged to establish credit in elementary courses by passing advanced standing examinations. All majors take courses in differential equations, and linear and abstract algebra and analysis. The remainder of the field of concentration is determined by the student's interests and future plans. Students are encouraged to acquire proficiency in computer programming and to take substantial work in related fields in which they have a special interest.

Undergraduate degree tracks are available to prepare students for: (1) employment in industry, business or government; (2) secondary school mathematics teaching; and, (3) graduate study in mathematics. Students choosing secondary school teaching complete all requirements for state licensure as part of this program.

Many of the more challenging positions in mathematics require study beyond a bachelor's degree. For example, university teaching requires a PhD, while teaching in a junior college requires at least a master's degree and possibly a doctorate. Approximately 25 percent of the students receiving a bachelor's degree in mathematics go on to graduate work.

Graduate Programs

The Department of Mathematics offers programs leading to the Master of Science and Doctor of Philosophy degrees.

Prerequisites. A student beginning graduate study in mathematics is expected to have had, as an undergraduate, at least 18 semester hours in mathematics beyond elementary integral calculus including courses in differential equations, linear algebra and modern algebra. An applicant whose preparation is deficient may be admitted to the program, if otherwise qualified, but will be required to correct the deficiency, increasing somewhat the time required to complete work for the degree. Prospective graduate students are advised to take at least introductory courses in related fields such as physics, statistics, and computer science.

The Master of Science Degree. The department offers three tracks in the Master of Science degree, computational and applied mathematics, mathematics education and pure mathematics. Each degree requires 32 credit hours of graduate course work in mathematics or related subjects. Two of these hours are waived if a master's thesis is written. Each student must have a grade of "A" or "B" in 18 hours of core course work.

The Doctor of Philosophy Degree. The department offers three tracks for the PhD degree: applied mathematics, mathematics education and pure mathematics. Admission to the PhD program is granted only to students with superior records in their previous graduate or undergraduate study. A minimum of 90 semester credit hours of graduate credit beyond the bachelor's degree is required for the PhD degree. This may include a maximum of 24 hours credit for the thesis. Each student has an individual doctoral committee which advises the student in the formulation of an approved plan of study for the degree. Each student must pass three comprehensive exams from a selection of core topic areas, or pass two such exams and complete a minor thesis.

The most important requirement for the PhD degree is the preparation of an acceptable dissertation. This dissertation must demonstrate the candidate's ability to do independent, original work in mathematics, or mathematics education.

School of Media and Strategic Communications

Derina Holtzhausen, PhD, *Professor and Director*

At Oklahoma State University, the professional areas of mass communication are grouped in the School of Media and Strategic Communications (SMSC). These areas seek to complement each other with a minimum of duplication. Degrees offered include a bachelor of arts and sciences in Multimedia Journalism, Sports Media and Strategic Communication.

A modern democratic society cannot live by its ideals if its mass media practitioners are merely competent technicians who worry less about *what* is reported to the people than *how* it is reported. Citizens must have accurate information about social, political and economic problems as well as knowledge of actions taken by government agencies and organizations at all levels. From village council to Supreme Court, there can be no exception from the rule that public business is the public's business.

To speak to people through different media, whether as a journalist or a strategic communication practitioner, requires knowledge of the people to whom or on whose behalf one wishes to speak and an understanding of the world in which they live. Therefore, the curricula of the School of Media and Strategic Communications are designed to offer more than training in communication techniques. Three-quarters of the SMSC student's time at the University is devoted to a liberal education in the arts and sciences. At the same time, the student gains competence in a professional field through courses in the SMSC.

On graduation, undergraduate students in the School of Media and Strategic Communications will be able to:

1. Demonstrate an understanding of the relevant constitutional freedoms, legal issues and ethical principles in mass communications.
2. Demonstrate an understanding of the relevance of human diversity in mass communications.
3. Demonstrate an understanding of the history and social role of mass communications.
4. Demonstrate critical, creative and individual thinking.
5. Demonstrate an understanding of the relevant theories and concepts of mass communications.
6. Demonstrate an understanding of the methods and techniques of research and information gathering.
7. Demonstrate appropriate writing, editing and production techniques in mass communications.
8. Demonstrate an understanding of relevant planning and management methods in mass communications.

Accreditation. The undergraduate programs of study in the School of Media and Strategic Communications are accredited by the Accrediting Council on Education in Journalism and Mass Communication.

Admission to the Undergraduate Program. Admission into the School requires completion of 28 hours with a minimum graduation retention GPA of 2.50. Enrollment in all upper-division SMSC courses except MC 3173 and MC 4253 requires admission into the School, a passing score on the SMSC language proficiency exam, and a minimum grade of "C" in MC 2003 and MC 2023. The ability to type a minimum of 30 words per minute and either a computer course or computer literacy is also required for enrollment in all writing courses beginning with MC 2003.

Requirements for Graduation. The degree programs of study offered in the School of Media and Strategic Communications are built around strong writing, liberal arts and professional components. Of the 127 hours required to earn a degree in SMSC, students must complete up to 45 semester hours in media and strategic communications courses and a minimum of 65 hours in traditional liberal arts courses.

Students must have a minimum 2.5 GPA in all SMSC courses and major requirements with a minimum grade of "C" in each course. No more than 12 hours in SMSC courses may be transferred from other institutions.

All three degree options in SMSC are also required to develop and maintain a portfolio exhibiting their best and most appropriate work as well as assignments required for the portfolio. Portfolios will be turned in during senior capstone courses. School faculty, staff and industry professionals will evaluate these portfolios periodically and offer guidance and constructive criticism. It is anticipated that the portfolios will be helpful in showcasing students' performance when they apply for internships or jobs.

Multimedia Journalism. The many changes in the media environment require that students should have expertise in journalism and storytelling in all media formats. The degree in multimedia journalism will allow graduates to work with any media platform, be it print, television, radio, or the internet. While students will develop their skills across all media platforms they will be able to

specialize in one of three areas: multimedia journalism, multimedia production or multimedia editing.

Students learn the basics of journalism writing and reporting for print, online, audio and video production on state-of-the-art equipment and are challenged to put those skills to use by participating in the daily operations of the campus newspaper, The *Daily O'Collegian* and its online version *ocolly.com*, the radio stations KOSU and KXZY and various video productions. Students gain on-the-job multimedia experience through internships and some hold part-time jobs as campus correspondents for various publications or work for media in the Stillwater area. Internships at broadcast and cable outlets in the region also provide students with on-the-job experience and a valuable opportunity to work with seasoned media professionals. Many juniors and seniors find this work a source of revenue to assist them in the cost of their education.

The multimedia program is affiliated with the Oklahoma Press Association, Southwest Journalism Congress, the Society of Professional Journalists, the National Association of FM Broadcasters, Radio Advertising Bureau, Oklahoma Association of Broadcasters, Oklahoma Broadcast Education Association, National Association of Broadcasters, Broadcast Education Association and National Public Radio.

Sports Media. This program, one of very few undergraduate degrees in sports media in the United States, offers students the option of concentrating in sports multimedia journalism or sports strategic communications.

Students pursuing an undergraduate degree in sports media from OSU receive classic hands-on training in all aspects of the industry. Depending on the area of concentration, course work may include sports writing, play-by-play announcing and field production.

Oklahoma State University and the School of Media and Strategic Communications enjoy a special relationship with sports media throughout the country. As a major sports venue, the OSU campus is visited regularly by national and regional sports media - both print and broadcast - to cover major sporting events. These media organizations routinely utilize SMSC student workers. The 2004 debut of ESPN was telecast from Stillwater because the campus represents classic collegiate sports, and because the network producers were able to rely on a supply of ready and trained media and strategic communications students.

The sports media faculty has strong professional backgrounds in the field and offers students the solid foundation in both theory and practice that prepare them for a variety of career paths.

Strategic Communication. Employers increasingly require communication professionals to first have an understanding of the relevant audiences with whom they wish to communicate or on whose behalf they need to communicate and then choose the best communication methods, be it through the techniques currently taught in public relations or advertising or both. This requires students to have a thorough understanding of the political, social and economic systems of society. Additionally, the new media environment now requires that professionals have skills they can apply to every media platform, be it print, television, radio, or the internet. Although all students in strategic communication are required to have experience in and an understanding of all strategic communication methods, they do have a choice to specialize in either public relations or advertising.

The degree in strategic communication prepare students to be professional communicators in any environment, such as counseling firms, advertising agencies, corporations, non-profit organizations, or even their own businesses. It still prepares students to write and communicate well because good writing skills remain the foundation of professional communication. It also grounds students in a thorough knowledge of gathering and analyzing data relevant to their practice and in communication management principles with an emphasis on strategic thinking. The ultimate aim of this degree is to prepare students to be the future leaders in their field. Students complete their degree with a capstone campaign course, where students integrate and apply the knowledge they gained in their undergraduate work to a single strategic communication campaign.

Many students hold part-time jobs while studying and participate in internships to gain on-the-job experience.

The program is affiliated with the American Advertising Federation, the American Academy of Advertising, the Society of National Association Publications, the International Association of Business Communicators, the Public Relations Society of America and the Association of Women in Communication.

Graduate Programs

The School of Media and Strategic Communications offers courses leading to the degree of Master of Science in mass communications. Preferred qualifications for admission to the master's program include a bachelor's degree in an area of mass communication with an overall grade-point average of 3.0. The Graduate Record Exam (GRE) is required. Graduates of a non-mass communication discipline

may enter the Master of Science program, with the stipulation that they complete, without graduate credit, foundation courses relevant to career interests during the first year of their graduate education.

Basic emphasis is on media management, strategic communication management, application of current communication theories and research methods and designs to the professional aspects of mass communication. Electives in the behavioral sciences are encouraged.

Microbiology and Molecular Genetics

William D. Picking, PhD, *Professor and Head*

Microbiology/Cell and Molecular Biology. Microbiology is the study of bacteria, viruses and fungi and their many relationships to humans, animals and plants. Cell and molecular biology is the study of how cellular components interact to promote life processes. Microbiologists apply their knowledge to public health and sanitation; food production and preservation, industrial fermentations which produce chemicals, drugs, antibiotics, alcoholic beverages and various food products; prevention and cure of diseases in plants, animals and humans; biodegradation of toxic chemicals and other materials present in the environment; insect pathology; and other activities which seek to control microbes, to enhance their useful activities and prevent the growth of those which are harmful. Microbiology is the basis for the exciting and expanding field of biotechnology which endeavors to utilize living organisms to solve important problems in medicine, agriculture, and environmental science.

Microbes live in a great variety of environments and carry out many of the processes found in higher organisms. They are thus interesting in their own right as model systems for the study of reactions which occur in higher organisms. As subjects for research in biochemical and molecular genetics, microbes have contributed most to the current knowledge of genetics at the molecular level (microbial systems are in the forefront of genetic engineering).

Departmental courses are designed to provide comprehensive training and the skills required for working with microorganisms, as well as a broad understanding of all aspects of microbial life. Many of the microbiology positions require graduate level studies. The undergraduate program includes five options: Molecular Genetics, Microbial Ecology/Environmental, Microbial Pathogenesis, Clinical Laboratory Science, and Biomedical Science. In addition to the BS degree, the department offers graduate studies leading to the MS and PhD degrees in various areas of concentration, including virology, microbial physiology, microbial genetics, microbial anatomy, microbial pathogenesis, immunology, and several applied areas.

Opportunities for employment exist at all scholarly levels, in many local, state and national government agencies and in varied industries. The record for employment of microbiologists has been excellent for many years and with the increased interest in biotechnology, employment opportunities look even brighter for the future.

These fields require a solid knowledge of other sciences and students should take high school courses in mathematics, biology, chemistry and physics. Students should have broad interests in how living cells work and have aptitudes for biology and chemistry.

Molecular Genetics Option. This option includes the study of DNA and RNA synthesis and how genes are expressed to allow differentiation of a single-celled egg into a complex multicellular organism. Molecular biologists study protein synthesis, cell ultrastructure, organelle structure and function, enzymology, and the collection of concepts and procedures commonly known as "biotechnology" or "genetic engineering."

With the advent of modern molecular biology, studies of the fundamental processes of living cells have taken dramatic strides. This option at Oklahoma State University has been designed to allow students to acquire training in a multidisciplinary atmosphere that prepares them for employment in the rapidly growing fields of bioinformatics, molecular genetics, biotechnology, and several other areas. Students following this avenue of study will be well prepared to continue toward the MS or PhD degrees at this or other institutions or to find employment directly upon graduation.

Microbial Ecology/Environmental Option. Microorganisms play an astonishingly important role in the evolution, ecology, and biogeochemical processes of our planet and in sustenance of its inhabitants. This option deals with the role of microorganisms in the environment, their diversity and interactions with each other and with the environment in which they live. The application of the latest molecular tools in retrieving genomic information directly from the environment has provided access to the vast microbial world of uncultivable organisms and in exploring their identity, in-situ activity, genetic diversity, and their importance to human health and the environment. The development of innovative cultivation strategies has helped isolate elusive microbes from some of the most unusual and extreme environments, and

thus providing glimpses into their novel genes and metabolic potential that can be exploited for the development of biotechnology. The Microbial Ecology - Environmental Microbiology is truly an interdisciplinary science. To explore the inner workings of microbes and the processes they catalyze in complex ecosystem, a multidisciplinary integrative approaches involving disparate disciplines such as microbiology, geology, molecular biology, and computation biology are required.

Microbial Pathogenesis Option. The aim of the Microbial Pathogenesis option is to train undergraduate students seeking to pursue graduate studies in this field or a career in medically related fields. A third of all preventable deaths on this planet are due to infectious diseases. Over a period of several decades, there has been a significant decline in infectious diseases due to the considerable impact of medicine and scientific research; however, there is an upsurge of infectious threats to human beings in the recent years. This has been due to a number of reasons, including the emergence of new and antibiotic resistant infectious agents and a scarcity of effective vaccines.

This option focuses on the study of the various groups of infectious agents, the mechanisms employed by these agents to subvert the host immune system and cause tissue damage, and their interactions with host cells. A comprehensive understanding of the complex mechanisms of microbial pathogenesis requires study of molecular biology of the pathogens, eukaryotic cell biology and the host immunological defense strategies. Our BS degree program in Microbiology with the Microbial Pathogenesis option is designed to expose the students to this exciting area of science so that they are well equipped to pursue their chosen careers.

Clinical Laboratory Science Option. This option is designed to give the student the broad general education and the highly technical skills that are required for a successful career in this important medical science. The minimum requirement for the BS degree in clinical laboratory science (CLLS) is three years of university work that includes general chemistry, organic chemistry, biochemistry, immunology, genetics, anatomy & physiology, physics, upper-division courses in microbiology, calculus, and one year of clinical laboratory education (internship) in an approved school of clinical laboratory science.

For the BS degree and certification, the students will, after three years of university work, complete one year of clinical internship in a school of clinical laboratory science accredited by the National Accrediting Agency for Clinical Laboratory Science (NAACLS) and currently affiliated with Oklahoma State University. Schools of clinical laboratory science/medical technology are located at the following hospitals: Comanche County Memorial Hospital, Lawton, OK; St. Francis Hospital, Tulsa, OK; Valley View Hospital, Ada, OK.

Clinical Laboratory Science is unique in that students are able to enter a health profession directly after obtaining a BS degree. Clinical laboratory scientists comprise the third largest segment of the healthcare professions and are an important member of the healthcare team, working with doctors and nurses. This is a very versatile profession and allows the graduate to seek employment opportunities in healthcare laboratories, administration, health law, medicine, dentistry, veterinary medicine and more.

Biomedical Science Option. Students electing this option plan to complete at least 90 hours of course work toward a microbiology/cell & molecular biology major, including professional program prerequisites, and apply to their professional program (chiropractic, dental, medical, optometry, pharmacy, podiatry, veterinary) beginning in their sophomore year. Students accepted into one of these professional programs in their junior year can transfer credits earned in the first year of professional school back to Oklahoma State University to count toward a Bachelor of Science degree in microbiology/cell & molecular biology.

Graduate Programs

Programs of course work and research leading to the degrees of Master of Science and Doctor of Philosophy are offered by the department in either microbiology or cell and molecular biology.

Prerequisites. Applicants for admission must have received the baccalaureate degree from an accredited university or college and must have completed a minimum of 30 semester credit hours in the biological and physical sciences. The Aptitude Test portion of the Graduate Record Examination is required of all applicants. An applicant will not be accepted at the MS level unless at least one member of the departmental graduate faculty agrees to act as the applicant's adviser. A majority of the departmental graduate faculty must approve applicants at the PhD level.

The Master of Science Degree. In addition to the general requirements for the degree, the following departmental requirements must be met in attaining 30 credit hours with thesis. The plan of study must include six credit hours in MICR 5000 and one credit hour in MICR 5160.

Candidates for the MS degree are expected to attend and participate in all departmental seminars. A final oral examination covering the thesis is administered by the advisory committee following a public presentation of the candidate's research.

The Doctor of Philosophy Degree. The study plan of a student entering the program with a bachelor's degree must include 30 credit hours in courses other than MICR 5000 and MICR 6000. Those entering with a master's degree must include 15 hours in courses other than MICR 6000 which were not included in the master's study plan. Three hours of MICR 5160 must be included.

Candidates for the PhD are expected to attend and participate in all departmental seminars. Candidates for the PhD degree must pass both a written and an oral qualifying examination. The final examination covering the dissertation research is given promptly after the candidate has given a public seminar on his/her research work.

Departments of Military Studies

Peter M.A. Sherwood, PhD, ScD, *Coordinator*

In agreement with the U.S. Air Force and the U.S. Army, OSU recognizes separate departments of Aerospace Studies and of Military Science as integral academic and administrative departments of the University. These two departments are administered within the framework of the College of Arts and Sciences. The two departments provide instruction under the basic and advanced Reserve Officers' Training Corps (ROTC) programs.

Scholarships. The Army and Air Force ROTC programs offer a wide variety of four, three, and two year merit based scholarship opportunities to qualified students interested in pursuing a commission in the Army or Air Force. ROTC scholarships provide payment for tuition, mandatory fees, books, and a monthly subsistence allowance for the duration of the scholarship period. An additional university based incentive scholarship of \$1,000.00 per semester is allocated to 10 ROTC scholarship recipients annually. Four-year National ROTC scholarships are offered annually to high school seniors, who will be entering college in the fall semester. Scholarship applications may be obtained through local high schools, online or by contacting the University's ROTC department. In addition, the Army ROTC Program offers four and three year Guaranteed Reserve Force Duty Scholarships annually to students interested in pursuing a commission as an officer in the Army National Guard or United States Army Reserve.

Flexibility. ROTC at OSU offers a variety of programs, giving the student considerable flexibility in charting a path to commissioning in the Army or the Air Force. Programs are designed so those individuals in all OSU colleges, departments and majors can tailor their academic/ROTC curriculum in order to attain commissioned status. Opportunities also exist in both Army and Air Force ROTC for the student to "test the water" early in his or her academic program by participating in basic familiarization courses. Those interested in learning more about ROTC at OSU, or in enrolling, are urged to contact the professor of aerospace studies or professor of military science in Thatcher Hall on campus.

Aerospace Studies

Col Kevin C. Kriner, MBA, MSS, *Professor of Aerospace Studies and Head*

The basic four-year Air Force ROTC program consists of one classroom hour and one leadership laboratory period per week during the freshman and sophomore years. Additionally, at least two hours a week of physical conditioning is required. Basic courses give students a thorough background in United States Air Force (USAF) structure and history, as well as drill and ceremony, military customs and courtesies and wear of the uniform. Non-scholarship cadets enrolling in the freshman- and sophomore-level courses incur no military obligation. During the spring of the sophomore year, students compete for selection into the Professional Officer Course (POC); those selected will attend either a four- or five week field training encampment during the summer between the sophomore and junior years. For students getting a late start into the Air Force ROTC program, depending on academic major, there are two- and three-year programs that can lead to POC entrance and eventual commissioning.

Following completion of field training, students spend four semesters as POC cadets; academic courses consist of three classroom hours and one leadership laboratory per week, for three hours of credit per semester. Class work and laboratory involvement are designed to prepare the student for his or her future role as a leader in the USAF. In addition, students are given the opportunity to gain practical leadership experience by holding various positions of responsibility in the Cadet Wing. POC cadets not on two-, three- or four-year scholarships will receive \$450.00-\$500.00 per month subsistence allowance if they maintain retention standards.

All students have the opportunity to participate in various cadet wing-sponsored extracurricular activities during the year. These include visits to active Air

Force installations to gain first-hand knowledge of the duties of junior Air Force officers; cadets are often taken on incentive flights in USAF aircraft. Cadets are also given the option to apply for numerous summer programs. These include expanded base visits, and even free-fall parachuting, and glider training programs in conjunction with the U.S. Air Force Academy.

Students who successfully complete the POC program are commissioned as second lieutenants in the United States Air Force, with a four-year obligation. Those who are selected for pilot or navigator training incur a ten- or six-year commitment, respectively.

Military Science

Lt Col William T. Beck, *Professor of Military Science and Head*

Students desiring to expand the scope of their education, while preparing for a dynamic and rewarding career as an officer in the United States Army, active duty, National Guard, or Army Reserve, choose the Army Reserve Officer Training Corps program (ROTC) as an adjunct to their chosen field of study. With courses dealing in a wide range of subjects from leadership to tactics, taught both indoors and out, the Army ROTC program produces over 5,000 second lieutenants each year across the nation.

The Army ROTC program consists of a basic course and an advanced course. Students desiring to see what the program is like may enroll in up to 10 hours of military science with no commitment to the United States Army. During this basic course, emphasis is placed upon leadership, war gaming, individual skills, problem-solving, rappelling, and land navigation. All lower-division ROTC courses are open to the entire University community regardless of year in school.

Students committing themselves to a commission in the United States Army are permitted to enroll in the Army ROTC advanced course upon completion of the basic course or equivalent. The advanced course consists of 12 hours of academic work taken during the junior and senior year. In addition, participation in a five-week summer camp is mandatory. The advanced course emphasizes further development of leadership skills, offensive and defensive tactics, physical conditioning, ethics, military law, professional and basic military knowledge and skills. Additionally, advanced course students are responsible for use of required military skills as they act as assistant instructors during laboratory periods, plan leadership laboratories, plan and conduct field training exercises and are responsible for coordinating and supervising departmental extracurricular activities. In addition there are several students who join Army ROTC in the simultaneous Membership Program in which they are both students in the ROTC and members of the Army Reserve or Oklahoma National Guard. This provides tremendous experience and economic benefit.

All advanced course students must satisfy directed professional military education (PME) requirements prior to receiving a commission. The PME consists of two essential parts—a baccalaureate degree and completion of commissioning requirements to include an upper division military history course.

Students interested in the Department of Military Science are encouraged to visit with departmental faculty members at any time for further information concerning departmental course offerings and class sequence. A number of two- and three-year scholarships are available through the department. Prior enrollment in military science is not a prerequisite for departmental scholarship application.

Music

Brant Adams, PhD, *Professor and Head*

The music program at OSU serves students who plan careers in the field of music as well as those who desire to participate in any element of a comprehensive music program. Professional instruction prepares students for careers in performance, teaching, or the music industry. The OSU undergraduate degrees are also excellent preparation for graduate school and for church positions.

The student planning to major in music at the university level should consider his or her background carefully. It should include a strong interest in music during high school years and a talent for performance in vocal or instrumental music. Individual lessons, fundamental theory knowledge, and basic piano ability will also be helpful.

The music major may choose from the following degrees: (1) Bachelor of Music (BM) in performance, (2) BM in instrumental/vocal music education, (3) BM with elective studies in business, and (4) Bachelor of Arts (BA) in music. In addition, the Bachelor of University Studies allows the student to combine an interest in music with another outside field.

The student majoring in a discipline other than music may participate with music majors in all ensembles (choirs, opera, orchestra, wind ensemble, marching band, concert band, jazz bands, and chamber groups) and courses, as

well as individual lessons for academic credit.

An active scholarship program provides assistance to music majors as well as non-majors. Students are invited to write, call (405) 744-6133, or check our website (music.okstate.edu) for audition information.

Faculty members, students and ensembles present over 100 concerts and recitals annually. The department also supports an active program of extension and outreach opportunities.

The Department of Music is accredited by the National Association of Schools of Music (NASM).

Admission Requirements. Students wishing to major in music should contact the Department of Music to arrange for an entrance audition and interview.

Graduate Programs

Oklahoma State University offers a graduate degree which combines two elements that are important for many of today's musicians and music educators. The Master of Music in Pedagogy and Performance is available for the conductor, the school teacher, and the performer. We believe that a fine music pedagogue is an accomplished musician as well.

For the student pursuing the conducting track, we stress challenging studies in conducting skills, repertoire, and rehearsal techniques. The degree candidate will focus on his/her particular area of specialty and will have numerous opportunities to conduct appropriate choirs, wind bands, orchestras and string groups, and chamber ensembles.

As a part of specializing on his/her instrument, the student who chooses the applied music track will develop a refined knowledge of the literature composed for that instrument and will also learn the teaching and technical approaches that have been developed for that musical medium. Performing opportunities, both solo and collaborative, are an important component of the degree candidate's studies.

The school music educator will enroll in courses addressing the musical development of the students with whom he/she works. The practical application of advanced teaching techniques is a focus of studies, bolstered by the opportunity for additional study in applied music and conducting as appropriate.

The Master of Music in Pedagogy and Performance is a 32 hour degree. Each track includes courses in music research and bibliography, music theory, and music history. Elective credits that are built into each degree track permit the student to explore additional interests. Each degree candidate will complete a final project which contains both written and performing components. A final oral examination is also part of the degree requirements.

Admission Requirements. To participate in the pedagogy and performance program, a student must first make application to the Graduate College. Prospective students must have earned a Bachelor of Music from an NASM accredited institution, or the equivalent. Students interested in the conducting track must audition on campus, or submit a video-tape of their conducting, and fill out the department of music application for admission. Students interested in the applied music track must audition on campus, or submit an audiotape of a recent performance (minimum of 20 minutes of music), and fill out the Department of Music application for admission.

Financial Assistance. The Department of Music offers a variety of assistantships with areas of specialization including music appreciation, class piano, instrumental techniques, accompanying, and music technology. Additional scholarships may be awarded through the Department of Music.

Philosophy

Doren A. Recker, PhD, *Associate Professor and Head*

Philosophy is an intellectual activity to be practiced and a subject matter to be studied. As an activity, philosophy seeks to analyze, evaluate, and often reformulate the ideas, principles and arguments by which experience is understood and explained and by which action is directed and justified. Every area of experience or behavior—*aesthetic, political, religious, scientific or moral*—is considered by philosophy. The writings produced by great philosophers are worthy of study as models of thought and as artifacts of historical influence and cultural significance. In this latter role philosophy is related to the development of every academic discipline.

Courses offered in philosophy fall into three general groups: broad introductory courses that cover a variety of topics, historical courses that proceed chronologically through a sequence of thinkers, and special topic or field courses. Some offerings combine the latter two characteristics. Few undergraduate courses are intended primarily for majors. The BA program in philosophy has been approved for offering at OSU-Tulsa.

Students may pursue work in philosophy as part of their general education, as a support to their major area of concentration, as a minor, as a major leading to

a BA degree, as a second major or in connection with a graduate program. The program in the major accommodates students of three sorts. The "general" track is designed for students who wish to explore philosophy as a general path to the refinement of their thinking, writing and speaking, and a deepening appreciation of the most fundamental and guiding ideas and values of civilization. It is a very flexible program, requiring two lower-division introductory courses, two upper-division historical survey courses and 19 hours of additional unspecified philosophy courses numbered 3000 or above. The "pre-professional" track is designed for students who wish to ground their professional interests (such as law, medicine, business, public service, the ministry), on a philosophic basis. Though requirements are technically the same for these students as ones on a general track, they are assigned a second adviser who helps to coordinate curricular and other activities for the best career preparation possible. The "graduate preparation" track is designed for students who are interested in pursuing graduate studies in philosophy. It requires an additional six hours of upper-division philosophy and mandates more specific courses than either of the other tracks. Students may shift from track to track at any time in their matriculation without prejudice.

A minor or a second major in philosophy will complement any other area of study. A philosophy minor requires 18 hours of unspecified philosophy courses, 12 of which must be numbered 3000 or above.

Graduate Programs

The Department of Philosophy offers a Master of Arts degree in philosophy. Consult the "Master's Degree Programs" section of the "Graduate College" in the *Catalog* for general regulations and requirements relating to admission.

The Master of Arts degree in philosophy offers a broad-based curriculum designed to serve the interests of two kinds of students:

1. *Professional Emphasis*: for the student who wishes to pursue his or her study of philosophy as a supplement to preparation in a wide variety of professions including business, law, government, the health professions, the ministry, or counseling.
2. *PhD Emphasis*: for the student who wishes to pursue his or her study of philosophy as a preparation for PhD studies in philosophy at another institution.

Students interested in the *professional emphasis* have the opportunity to choose from a wide variety of courses that support their career plans (biomedical ethics, business ethics, philosophy of law, philosophy of religion, and cognate courses in other disciplines).

Students interested in the *PhD emphasis* have the opportunity to enhance their understanding of the history of philosophy, logic, and metaphysics and epistemology.

Students in all of these programs are able to compete for teaching assistantships and may teach either Critical Thinking or Introductory Moral/Social Problems courses.

Prerequisites for admission to the program are 24 semester credit hours (at least 18 at the upper-division level) in philosophy including courses in the history of ancient, medieval, and modern philosophy (PHIL 3113 and 3213 or equivalents) and a course in logic (PHIL 3003 or equivalent). Students without these prerequisites, but otherwise admissible, may be granted "qualified" or "provisional" status until the prerequisites are satisfied.

The Master of Arts degree in Philosophy may be earned through any of three options: (1) Thesis option (twenty-four credit hours of course work plus six credit hours of research in which a thesis is written); (2) Report option (thirty credit hours of course work plus two credit hours of research in which a report is written); (3) Creative Component option (thirty-two credit hours of course work including a creative component).

Students will prepare a plan of study under the guidance of the graduate adviser. A student may choose one of two options. The first option is the General Track: this provides students with a well rounded background in the history of philosophy and the major areas of philosophy while leaving the student enough elective hours to pursue his or her special interests. The second option is the Applied Ethics Track: In addition to providing a rounded background in the history of philosophy, this track emphasizes courses in ethical theory and applied ethics.

All candidates for the Master of Arts in philosophy degree are required to pass two four-hour written examinations on selected major Western philosophical works. Each student is supervised by a three-person advisory committee appointed for, and in consultation with, the student.

A student may also, in accordance with the policies of the Graduate College, select a graduate minor in connection with the master's degree in philosophy, thus permitting a concentration of work in broad areas such as social thought, cognitive science, or religion.

Students pursuing a master's or doctor's degree in another field may elect philosophy as a graduate minor. Selected courses and seminars in philosophy can broaden and complement work in such areas as economics, education, engineering, English, history, psychology, and sociology.

Physics

John W. Mintmire, PhD, *Regents Professor and Interim Head*

Physics is the science of matter, energy and their interactions. Physics majors learn the fundamental laws governing the natural world, and in so doing develop critical skills of observation and quantitative analysis in both experimental and theoretical settings. Because those skills are increasingly valued in diverse fields in today's technological society, persons trained in physics are found not only in science, but also in fields where analytical skills are vital to success, such as finance, medicine, law and engineering.

The Department of Physics offers two bachelor's degree programs. First, the "BS in Physics" degree program is designed for students who seek a broad, comprehensive study of the set of traditional as well as contemporary topics which together comprise the subject of physics, and who ultimately may be interested in obtaining master's and/or doctoral degrees and becoming professional physicists or astronomers. In contrast, the "BS in Applied Physics" degree program has been developed for students who wish to combine studies in physics with studies in other areas such as biology, geology, business, computer science, engineering, mathematics, or pre-medicine, perhaps in preparation for graduate degrees in those areas. Interdisciplinary study is also possible through double majors with physics, a major in physics with minor in another subject, or minors in physics. The detailed requirements for all degree programs of the Physics Department can be obtained from the department office or its website: www.physics.okstate.edu.

Prospective physics majors should contact the departmental adviser as soon as possible to guarantee an enjoyable and profitable undergraduate career. A special freshman-level course, PHYS 1001, acquaints new physics majors with the department's professors and research, as well as with each other. During their first two years, physics majors learn the laws of mechanics (forces and motion) and electromagnetism which epitomize the work of Newton and Maxwell, among others. At the same time, students develop their mathematical skills through courses in calculus and differential equations. A new sequence of calculus-based general physics courses, PHYS 2314 and 2414, is now in place for students who want to major in science fields in general, or physics, in particular. Students wanting to major in physics may take these courses in lieu of the PHYS 2014 and 2114.

During their last two years, physics majors delve into advanced topics including the quantum and relativistic physics of Schrodinger, Einstein and their colleagues. Courses in laboratory and computational methods further develop experimental abilities. Students are also encouraged to work in the department's research labs or astronomical observatory. Students pursuing the BS in physics take additional physics courses and do a senior project. Students seeking the BS in applied physics replace the additional physics courses with upper-division courses in their chosen areas.

Graduate Programs

Prerequisites. Thirty semester hours of physics beyond the elementary course work and mathematics courses through advanced calculus and differential equations are required.

The Master of Science Degree. Students can choose between a thesis or non-thesis plan. For both plans, the required courses are PHYS 5113, 5313, 5413, 5453 and 5613. The thesis plan requires the successful completion of 30 semester credit hours beyond the BS and the submission of an acceptable thesis (six credit hours of PHYS 5000) based on original and independent research, on a topic chosen in consultation with the student's adviser. The student must successfully defend the thesis in an oral examination. In addition, nine semester credit hours of electives must be completed in physics, mathematics or an allied field. The non-thesis plan requires 32 semester credit hours beyond the BS degree, including two credit hours of library research (PHYS 5000) on a topic chosen in consultation with the student's adviser. The completed written report must be orally presented to the student's advisory committee. Fifteen hours of electives are allowed within this program, including up to nine credit hours of senior level courses, depending upon the student's background. The electives must be chosen in consultation with the student's advisory committee. For example, an advanced course in mathematics along with Solid State I and II may be reasonable choices for someone with a materials specialization. For others, more courses in electrical engineering may be preferable.

Also available is an MS option in optics and photonics, in association with the School of Electrical and Computer Engineering. Students may pursue one of two plans, both of which require 24 credit hours of course work with at least one

course taken outside the student's specialization. Beyond this, the first plan (30 credit hours) requires an additional six hours of research and a successful defense of a thesis. The second plan (32 credit hours) requires an additional six hours of course work and a two-credit-hour report. Finally, a detailed Plan of Study, reflecting the specific programmatic requirements of the applicable MS program described above, must be filed, normally by the 17th credit hour. (See "Graduate College" section of the *Catalog* for discussion of the Graduate College's general requirements concerning the Plan of Study.) This Plan of study is to be filed with the Graduate College by the student after consultation with the student's advisory committee.

The Doctor of Philosophy Degree.

The following physics courses are required: PHYS 5113, 5213, 5313, 5413, 5453, 5613, 6313. Three additional PHYS prefix courses at the 5000 or 6000 level, including at least one course not in the student's specialization, must be completed. Additional courses reflecting the candidate's specialization may be required by the advisory committee. Ninety semester hours of credit beyond the bachelor's degree are required. A minimum of two-thirds of the graduate course credits must be in physics. No more than six credit hours of eligible *physics* course work at the 4000 level can be counted toward graduate credit and no more than 12 total credit hours of eligible course work in *all* subjects at the 3000 or 4000 level can be counted toward graduate credit. Courses taken at another institution will be evaluated by a faculty committee to determine whether they satisfy any requirements.

Prior to the appointment of the advisory committee, as described in the "Graduate College" section of the *Catalog*, a comprehensive written examination administered over four sessions (the "Prelims") must be taken. This examination will cover the content of the course work required up to and including the MS degree and will be given once a year. It will be given in four parts of three hours each. The results of this examination will be included in a review by the Department of Physics to determine whether the student should be allowed to form a PhD advisory committee.

A detailed Plan of Study reflecting these requirements, electives and transfer courses should be filed with the Graduate College by the student after consultation with the PhD advisory committee soon after passing the Prelims, and, in any event, normally by the 28th credit hour (see "Graduate College" section of the *Catalog* for discussion of the Graduate College's general requirements concerning the Plan of Study). The advisory committee then administers the qualifying exam, the successful completion of which is a departmental requirement (in addition to any other requirements of admission to PhD candidacy imposed by the OSU Graduate College).

The most important single requirement for the PhD in physics is the presentation of an acceptable dissertation which represents original research work by the student and which demonstrates the student's ability to do independent study as well as to plan and carry out future research in his or her field.

A photonics PhD program involving electrical and computer engineering with physics as the home department is also available. Details of the multidisciplinary photonics PhD program are found in the "Graduate College" section of the *Catalog*.

Political Science

James M. Scott, PhD, *Professor and Head*

Political Science is, on the one hand, an ancient discipline with roots in Plato and Aristotle, and on the other, it is one of the most recent of the social sciences with roots in the early twentieth century. Political scientists study political institutions, the political behavior of individuals and groups, the formulation of public policy, the relations among states, and also enduring moral issues, such as what is justice and how leaders should be chosen. Political science, by its very nature, blends normative and empirical issues. Questions about democracy, participation, justice, and representation have both empirical and evaluative components. The discipline attempts to understand who participates in the political process and, when they do not, what it means for society. A major in Political Science offers the student a front row seat in the analysis of these questions. The principal fields of study in Political Science are political theory, public law, comparative politics, international relations, public administration, and American politics. Students may pursue the Bachelor of Arts (45 hours of political science and related course work in addition to General Education and college requirements), or the Bachelor of Science degree (45 hours of political science and related course work in addition to General Education and college requirements) in Political Science with a concentration in any of the fields of study. Either degree option requires a minimum of 27 hours of political science in courses numbered 3000 or above, three of which are a capstone experience. Additional courses numbered 3000 or above from related areas of economics, English, foreign languages and literature, geography, history, philosophy,

psychology, religion or sociology are necessary to reach the required hours of the degree option. The minimum GPA is 2.50 with a minimum grade of "C" in all upper-division political science and related upper-division course work. Additional flexibility in the degree program is offered through internships, and opportunities to work with professors in developing independent study courses in areas where the department may not offer regular course work. Students may also pursue political science as a second degree, or as a minor to complement other areas of study. The minor in political science requires 15 hours of course work numbered 3000 or above, and must include three fields of political science. At least three of the hours must be taken in a field other than American politics, public law, and public administration. The required GPA for a minor is 2.50.

The political science major prepares students for a wide range of local, state, national and international careers, in and around government. It also provides preparation for admission to law school; teaching at the secondary level; urban and regional planning; political journalism; the conduct and analysis of foreign policy; and for graduate study in political science. At a more general level, political science has great career versatility for students. While the major does focus on the subject matter of government and politics, it also develops students' skills in critical analysis, written and oral communications, leadership and judgment. Such skills, prepare students for a wide range of options throughout their professional lives.

Graduate Programs

The Department of Political Science offers a Master of Arts degree in political science, a Master of Science degree in fire and emergency management administration, and a PhD in fire and emergency management and administration.

Candidates for the Master of Arts degree in political science complete a foundation of 18 hours of study and devote their remaining hours to specialization in two of the following areas: American politics, comparative politics, and international relations, with further specialization within these areas also possible. The plan is designed to prepare professional political scientists for careers in research and teaching, as well as administrative and policy positions in local, state or national government and international affairs.

Candidates who have significant professional experience in emergency services or have an undergraduate degree in an emergency service or related discipline may opt for the Master of Science in Fire and Emergency Management Administration. The MS in Fire and Emergency Management Administration is a specialized degree designed to provide an educational foundation for those who are currently serving or aspire to serve as managers or administrators in the fire service or emergency management. Candidates specialize in one of two areas: fire service administration or emergency management administration.

Admission Requirements for Master's Degree Programs. Any student having a bachelor's degree with an overall 3.00 grade-point average (on a 4.00 scale) may be admitted as a student in full standing. Those with less than an overall 3.00 grade-point average are considered for admission on a probationary basis. All graduate students in the MA program would benefit from completion of an undergraduate statistics class. A GRE, LSAT, or MCAT exam score is required.

Additional Admission Requirements for the MS in Fire and Emergency Management Administration degree. In addition to the general requirements outlined above, candidates for the Master of Science degree in fire and emergency management administration must meet one of the following requirements:

1. Have significant practical experience in a fire or emergency service organization.
2. Have a bachelor's degree in fire or emergency related discipline such as fire protection technology, fire management administration, fire science, emergency management administration; or
3. Not meeting the criteria specified in 1 or 2 above, complete a minimum of 12 hours of undergraduate study in fire protection and/or emergency management. Three of 12 hours must be an internship experience in fire or emergency management.

A complete application for admission to the master's program must include:

1. A completed Graduate College application submitted with a non-refundable application fee.
2. An official copy of undergraduate transcript(s).
3. Three letters of recommendation with at least one from an employer or faculty member familiar with the applicant's academic abilities.
4. TOEFL results for students for whom English is a second language. Students must have a score above 549 (paper exam) or 213 (computer exam) to be considered for admission.
5. A brief letter indicating interests and other information the applicant considers relevant.

Degree Requirements for the MA in Political Science. In addition to the general requirements of the Graduate College, requirements for the Master of Arts degree in political science are listed below.

1. A minimum of 33 credit hours in political science or closely related courses. These include: including nine required hours in research methods and foundations of Political Science (POLS 5103, POLS 5013, POLS 5023); three "proseminars" (American Politics-POLS 5703, Comparative Politics-POLS 5403, International Relations-POLS 5203); at least nine hours of electives in two subfields (American Politics, Comparative Politics or International Relations); and a three hour "creative component" or six hour thesis. A minimum of 21 hours of political science graduate seminars (seminars numbered 5000 or above) is required. The student must successfully defend the thesis or creative component orally before the faculty committee.
2. Satisfactory completion of comprehensive exams in two of the following areas: American politics, comparative politics, international politics.
3. Minimum 3.00 grade-point average, with only one grade of "C" allowed.

Degree Requirements for the MS in Fire and Emergency Management

Administration. In addition to the general requirements of the Graduate College, requirements for the Master of Science degree in fire and emergency management administration are listed below.

1. A minimum of 39 credit hours in political science or closely related courses. Required courses include a nine hour scope of the field core requirement, a nine hour methods requirement, and twenty-one hours selected from either a fire administration or emergency administration specialization track. Students must complete a three-hour practical research project or a thesis with a minimum of six hours. Pre-service students are required to take a three-credit hour internship.
2. Satisfactory completion of a final assessment project.
3. Minimum 3.00 grade-point average, with only one grade of "C" allowed.

Admission Requirements for PhD in Fire and Emergency Management

Administration. OSU Graduate College admission requirements include the following: An OSU Graduate College Application., payment of the OSU Graduate Application fee, and official transcripts of all previous college level course work including official transcripts that verify receipt of an undergraduate and graduate master's degree.

In addition, to the materials required by the Graduate College, applicants must meet the following departmental program admission requirements and provide the following documentation:

1. Undergraduate Degree: For the Fire Administration Track, an undergraduate degree in fire science, fire management, or a closely related degree. For the Emergency Management Track, an undergraduate degree in emergency management or a closely related degree.
2. Master's Degree: For the Fire Administration Track, a Master of Fire and Emergency Management Administration, Master of Public Administration, or closely related degree. For the Emergency Management Track, a Master of Fire and Emergency Management Administration, Master of Emergency Management, Master of Public Administration, or similar degree.
3. GPA: Both Tracks require a minimum cumulative GPA of 3.0.
4. GRE: For both Tracks, scores from the Graduate Record Examination taken within the past two (2) years. A combined GRE score of 1100-1300 on the verbal and quantitative general exam is preferred but not required.
5. Professional Experience: For the Fire Track, professional experience in a mid-to senior-level management position in the fire service or related first responder services is preferred, but not required. For the Emergency Management Track, professional experience in emergency management or a related field is preferred but not required.
6. Research Skills: For both tracks, evidence of strong research skills as evidenced by research related course work and grades recorded on official transcripts and examples of authored research documents included in the Application Portfolio (see below).
7. English Language Proficiency: For international students, both Tracks require a minimum TOEFL score of 101 (Internet) and 607 (paper).
8. Application Portfolio that includes a current resume, three letters of recommendation, a career goals essay, and copies of published materials authored by the candidate.

Degree Requirements for the PhD in Fire and Emergency Management

Administration. Degree candidates must have completed a master's degree. In addition, they must complete 39 hours of required common course work that includes 15 hours in a common core, 9 hours of research tools, and 24 hours of dissertation research. An additional 21 hours of courses are required in either a fire service administration track or an emergency management administration

track. Finally, candidates must take oral and written qualifying exams and must successfully defend their dissertation before their dissertation committee. Most courses in the FEMP PhD program are conducted in the department's state-of-the-art virtual classroom, where both on-site and off-site students participate simultaneously in the same class sessions.

Psychology

Larry L. Mullins, PhD, *Professor and Head*

The student pursuing a BA or BS in psychology is provided with a background which can be of great value in dealing with the personal, social and vocational areas of his or her life. The course of study applies the scientific method to the study of the behavior of an individual and behavior between individuals. The understanding of such material can be directly related to a variety of vocational opportunities. In addition, students may take advantage of opportunities to work with faculty in research or in teaching to gain additional experience. Such experiences are especially helpful to those students wishing to pursue graduate education in psychology or related fields.

A bachelor's degree in psychology is useful in a wide number of occupations in business, education and industry. The range of positions obtained by graduates covers almost all occupations requiring direct personal contact with other people. Some examples are supervision, training, sales, public relations and interviewing. Also included are positions with city, state and federal agencies, and in applied research. Although there is no licensure or certification to teach psychology in the schools, it is possible to earn a teaching certificate or license in social studies education with endorsement in psychology while pursuing a major in psychology. Persons interested in such teaching should contact the Office of Professional Education. (See "Professional Education Programs" in the "College of Education" section of the *Catalog*.)

The department also offers courses in speech communication to enhance the student's ability to effectively communicate in the interpersonal, organizational and public contexts. Both conceptual knowledge and practical application are stressed to prepare students to begin careers in business and industry, or to enter graduate or professional schools.

Graduate Programs

Employment in the professional field of psychology requires a graduate degree. Psychologists with advanced degrees have exclusive claim to some professional positions.

The Department of Psychology offers two programs of study leading to the degree of Doctor of Philosophy, one in Clinical Psychology and one in Lifespan Developmental Psychology. Students applying for the doctoral degree should have the following prerequisites: introductory psychology, quantitative psychology, experimental psychology, history and systems. Abnormal psychology is recommended for students applying to the clinical program.

Students in the doctoral program first work toward a Master of Science degree. In addition to meeting the general requirements of the Graduate College, for completion of the Master of Science, students must also:

1. Complete two semesters of quantitative psychology along with other course credits totaling 30 credit hours.
2. Complete a thesis project, supervised and reviewed by appropriate faculty members.

Following the completion of requirements, the student may be admitted to doctoral status in Clinical Psychology or Lifespan Developmental Psychology.

Religious Studies

Bruce Crauder, PhD, *Director*

Courses in religious studies are a vital part of a liberal arts education. The field involves the objective study of religious belief, literature and practice around the world. Opportunity is given for serious and objective study of these aspects in relation to major religions of past and present cultures. Special attention is given to the historical bases of world religions as well as to their effect upon present-day societies, in both the East and West. Courses are offered in several world religions, biblical studies, religious thought, and religion and culture.

Courses are open to all students without regard to personal views or affiliations. No attempt is made to promote a particular view. Emphasis is placed on the academic study of religion rather than the practice of a particular form of religion. Many of the undergraduate courses enable students to satisfy humanities requirements and also provide an excellent background for many types of graduate and professional programs.

Sociology

Duane A. Gill, PhD, *Professor and Head*

Sociology is the scientific study of human society and social behavior. Sociologists study a broad array of social phenomena ranging from the dynamics of social interaction to the composition and workings of entire societies.

The diversity of the faculty is reflected in the many different types of courses offered. Topics include environment and population; criminology; law and society; organizations, inequality; social psychology; race, ethnicity and gender. Many undergraduate majors take advantage of the applied research option by selecting supervised work-related internships.

The Department of Sociology offers BA and BS degrees in general sociology and applied sociology. The general sociology degree provides students the opportunities to obtain a strong liberal arts degree with a maximum number of electives, and provides a good base for pursuing a professional or graduate degree in sociology and in several other fields of study. The applied option focuses on law, crime and social justice; environment and social services and provides practical experience for work in a variety of settings.

The option in anthropology provides students with a basic introduction into methods, theory and principles of cultural anthropology, archaeology, and physical anthropology. Regular course offerings introduce students to past and present cultures within and outside the United States.

Graduate Programs

The Department of Sociology offers the Master of Science degree with a thesis, or non-thesis (terminal degree) options, and the Doctor of Philosophy degree. Programs are designed to prepare students for appointments to the faculties of colleges and universities, to work in private industry and social service agencies, and research positions in business and government. The department offers concentrations in environmental sociology, social inequality, social movements, deviance and criminology, and social psychology.

Degree Requirements. The MS in sociology, thesis option, requires a minimum of 31 hours of course work. The MS in sociology, non-thesis option requires 32 hours of course work. For students pursuing the PhD, a minimum of 94 semester credit hours beyond the baccalaureate, or 64 hours beyond the master's degree, is required. Each student is required to take nine hours of sociological theory, six hours of research methods, and nine hours of statistics. Detailed information on each program is available by writing to the department and requesting a *Graduate Student Manual*.

Statistics

Ibrahim Ahmad, PhD, *Regents Professor and Head*

Statistics is the science of learning from data. It is concerned with the development of theory and with the application of that theory to the collection, analysis and interpretation of quantitative information.

Because statistics is important in many scholarly disciplines, a degree in statistics provides the opportunity to enter not only the statistics profession but also many other fields which make extensive use of statistics. The areas of application include agriculture, the biological sciences, engineering, the physical sciences, the social sciences, education, business and home economics, among others. Statistics also promises to be important in emerging endeavors such as pollution and environmental research, energy utilization and health-care administration.

Those who pursue the study of statistics should be interested in scientific inquiry and should have a good mathematical background. In addition it is desirable that they have a genuine interest in some other subject which uses statistics.

Careers in government, industry and education, involving the disciplines previously mentioned, are open to the statistics graduate. In government and industry a statistician usually serves as a researcher or as a consultant to research scientists and decision-makers. In education, of course, the teaching function is added to those of research and consultation. In almost all careers, the statistician uses the computer.

The Statistical Laboratory operates within the department to provide statistical consulting to researchers—both faculty and student—across the campus.

The Department of Statistics offers the BS and MS degrees to those interested in applications of statistics, and the PhD degree to those who wish to make original contributions to the theory of statistics.

Graduate Programs

Admission Requirements. It is necessary to have an undergraduate degree, not necessarily in statistics or mathematics, to begin a program of study toward the master's degree in statistics. In some instances, it may be advantageous to have an undergraduate degree in another field. However, the student should have acquired a good mathematical background as an undergraduate. This should

be equivalent to the required mathematics courses in the bachelor's program (MATH 2144, 2153, 2163, 3013, 4013). Students admitted to the program with deficiencies will be required to remedy such deficiencies.

The Master of Science Degree. The Master of Science degree in statistics may be completed by following one of the three plans listed in the "Graduate College" section of the *Catalog*. Normally, the all-course work plan will be initiated at the suggestion of the faculty. Each student will be required to attain an introductory knowledge of some field of application outside of statistics, mathematics and computer science. This requirement may be satisfied by having taken a three-hour graduate course in an approved field of statistical application. Each student is required to have completed CS 1113 or to have demonstrated competence in a procedure-oriented language such as C or FORTRAN.

The Doctor of Philosophy Degree. The PhD requires the completion of 90 hours beyond the BS degree. A maximum of 30 of these credit hours may be earned by research for the dissertation. Each student will be required to attain an introductory knowledge of some field of application which may be satisfied by taking two three-hour graduate courses outside the fields of statistics, mathematics and computing. Each student is required to have completed CS 1113 or to have demonstrated competence in a procedure-oriented language such as FORTRAN.

Theatre

J. Kevin Doolen, MFA, *Professor and Head*

The Department of Theatre offers the Bachelor of Arts in Theatre degree.

The BA degree is a generalist degree, designed to provide a broad background in practical and theoretical areas while allowing students to develop a limited emphasis area. Students interested in several areas of performance and production or students interested in pursuing a double major or minor elect this degree plan. The Bachelor of Arts Degree in Theatre is a comprehensive 48 hour degree with course work in performance, directing, production, design and theatre history. Students can emphasize acting or design to a limited degree and can supplement their education with a minor in a related subject or a second major.

An active production program in two well-equipped theatre spaces augments course work. The regular production schedule consists of three to four major productions each year and two to four fully mounted studio productions that are often directed, designed, and performed by students. Students also have the opportunity to study with a variety of guest artists and scholars during each academic year.

In addition to professional careers in acting and production, this major can lead to careers in arts management, teaching, law, counseling, or any career area where self-awareness, problem solving, group collaboration and effective personal communication are essential.

Graduate Programs

The department offers course work leading to the Master of Arts degree in Theatre. The Master of Arts degree in Theatre is an initial graduate degree designed to build on students' individual theatre skills and to deepen a student's theoretical and practical understanding of the art form. Accepting only a limited number of students each year, the degree affords a great deal of individual contact with faculty members and considerable latitude in developing the plan of study.

Graduate candidates take a central general core of graduate level courses augmented by other courses available in the department and the university to develop and support their areas of special interest. Typically students seeking this degree plan to become teachers in secondary schools or two year colleges, or students who seek to enhance their background and skills in preparation for the pursuit of advanced degree work in a Master of Fine Arts or Doctoral Program.

The Master of Arts degree may be achieved in accordance with any of the three plans described in the section "Master's Degree Programs" in the "Graduate College" section of the *Catalog*.

A limited number of teaching assistantships are available to highly qualified students. Information and application forms may be obtained from the department head.

Undergraduate credentials should be referred to the department graduate program coordinator for evaluation to assist advisement and to determine any possible deficiencies that will affect the admission status.

Zoology

Loren Smith, PhD, *Regents Professor and Head*

The Department of Zoology offers BS degree programs in biological science, physiology, and zoology.

The undergraduate degree in biological science is appropriate for students wanting to obtain a broad background in the life sciences. Students complete course work in animal, plant and microbial biology, genetics, ecology, physiology and evolution. This degree meets the requirements for admission to graduate and professional schools, and also prepares students for a broad range of biology-related employment opportunities.

The undergraduate degree in physiology also serves as preparation for graduate school or a medically-related professional school. The bachelor's degree in physiology requires participation in an undergraduate seminar and intensive course work in general biology, genetics, comparative anatomy, mammalian physiology, biochemistry, mathematics, physics, and chemistry.

The curriculum in zoology is designed to provide a thorough background in the biology of animals, and prepares students for graduate school and many applied and professional careers. The zoology degree requires courses in ecology, evolution, genetics, and vertebrate and invertebrate zoology. Students participate in unique research experiences and/or internships, and develop a good foundation in the related fields of chemistry, physics, and mathematics.

Graduate Programs

Programs of Study. Programs of study leading to MS and PhD degrees are offered in zoology. The department emphasizes Ecology and Evolutionary Biology and Environmental Stress. Among faculty research interests are behavioral and evolutionary ecology, conservation biology, cytogenetics, ecotoxicology, ecosystem services, ecological immunology, behavioral endocrinology and neuroendocrinology, theoretical ecology, invertebrate ecology, ichthyology, herpetology, ornithology, mammalogy, parasitology, landscape ecology, molecular systematics, population ecology, aquatic and wetland ecology, and science education. The department includes the Ecotoxicology and Water Quality Research Laboratory and the Oklahoma State University Collection of Vertebrates.

Prerequisites. Applicants must have completed a baccalaureate degree including 40 semester hours in biology and related areas and have completed the Graduate Record Examination.

The Master of Science Degree. Students must prepare a research proposal and complete either a thesis or a report. For the thesis option, 30 credit hours are required; for the report option, 32 credit hours.

The Doctor of Philosophy Degree. Students must prepare a research proposal, pass written and oral comprehensive examinations, and complete a dissertation based on original research worthy of publication. Most students enter the program already with a MS degree and their plan of study must include 60 credit hours. Exceptional students can enter the program directly following the BS; their plan of study must include 90 credit hours.

Financial Aid. The department employs more than 35 graduate teaching assistants (TA). Faculty members also award research assistantships (RA) based on ongoing grants and contracts. Out-of-state students on RA or TA support are assessed in-state tuition only. However, in-state and out-of-state students on RA or TA support also receive full or partial waivers of in-state tuition.

Research Facilities. The Department of Zoology occupies a six-floor building with offices, classrooms, laboratories, and animal rooms. A broad range of instrumentation is available for both teaching and research. The department maintains laboratories in wildlife toxicology, genetic toxicology, conservation genetics, geographic information systems and remote sensing, and water quality. Specialized equipment within the department includes atomic absorption spectrophotometers, ultraviolet and visible spectrophotometers, ion chromatographs, high pressure liquid chromatograph, liquid scintillation counter, ultracentrifuges, gas chromatograph, ion specific electrodes, forage fiber analyzer, bright field and ipepifluorescent microscopes and photomicrography systems, cryostats, laminar flow hoods, tissue culture equipment, PCR thermocyclers, ultracold freezers, horizontal starch, agarose, and polyacrylamide gel apparatus, automated DNA sequencer, and computer labs. Available for use in field studies is the university-owned Lake Carl Blackwell area. The Department of Zoology also houses the OSU Collection of Vertebrates which includes over 25,000 lots of fish, 14,000 reptiles and amphibians, 3,000 birds, and 13,000 mammals.