

departments: Anthropology; Earth and Planetary Sciences; Forestry, Wildlife and Fisheries; Geography; Microbiology; Plant Sciences. A list of approved appropriate courses may be obtained from the office of either the Division of Biology or Ecology and Evolutionary Biology or from the Department of Ecology and Evolutionary Biology's Web page. Other courses, related to the student's determined interests, may be approved by petition to the department and the division. Courses applied to the major must include at least 4 hours at the 400-level and one laboratory or field course.

#### Honors Option

Requirements for the honors option are

- Completion of requirements for the biological sciences major – ecology and evolutionary biology concentration.
- A GPA of 3.50 in all the 300-level and above courses from the concentration and an overall GPA of 3.20.
- A minimum of 4 hours of Ecology and Evolutionary Biology 400, Undergraduate Research, during the junior and senior years.
- Ecology and Evolutionary Biology 407, Senior Thesis.
- Ecology and Evolutionary Biology 490, Undergraduate Seminar.

### MICROBIOLOGY CONCENTRATION

The concentration consists of 34 hours including Chemistry 350-360-369, Biochemistry and Cellular and Molecular Biology 401, Microbiology 310-319, 320-329, and 12 additional hours of 400-level microbiology courses.

#### Honors Option

An honors option is offered to selected students who have completed the required 300-level microbiology courses with a minimum grade point average of 3.50 in microbiology courses and 3.20 for all courses. In addition to these 300-level courses, an honors option requires successful completion of 15 additional hours of 400-level microbiology courses, including 401 and 402.

### PLANT BIOLOGY CONCENTRATION

The plant biology concentration consists of 29-34 hours including

- Chemistry 350-360-369 or 350, 310-319 or 310-319 and Biochemistry and Cellular and Molecular Biology 310.
- Biochemistry and Cellular and Molecular Biology 321; Ecology and Evolutionary Biology 330, 400 (1-4 hours), 410, 490 (1-2 hours); plus 9 additional hours of other upper-division courses offered by life science departments (except Biochemistry and Cellular and Molecular Biology 306, Ecology and Evolutionary Biology 304, 309).

A list of approved courses from other life science departments is available in the Division of Biology office.

#### Honors Option

Requirements for an honors option are

- A GPA of 3.50 in all the 300-level and above courses from the concentration and an overall GPA of 3.20.
- A minimum of 4 hours of Ecology and Evolutionary Biology 400 (undergraduate research) during the junior and senior year.
- A senior thesis that is acceptable to the student's committee.

Students interested in pursuing an honors option should contact the Division of Biology office for details.

### Minor in Biological Sciences

A minor in the biological sciences consists of 16 hours. Prerequisites are Biology 111-112 or 130, 140; and Chemistry 120-130. Requirements are Biology 240 and 250; and at least 8 hours chosen from 300- and 400-level courses in biochemistry, cellular

and molecular biology; ecology and evolutionary biology; and microbiology. In meeting the upper-division minimum requirement not more than 6 hours may be credited from any one biological science department, and not more than 3 hours of undergraduate research may be credited.

## DEPARTMENT OF CHEMISTRY

<http://www.chem.utk.edu>

Craig E. Barnes, Head

#### Professors

Adcock, J.L., PhD	Texas
Baker, D.C., PhD	Ohio State
Barnes, C.E., PhD	Stanford
Bartmess, J.E., PhD	Northwestern
Compton, R.N., PhD	Tennessee
Cook, K.D., PhD	Wisconsin
Dadmun, M.D., PhD	Massachusetts
Feiglerle, C.S., PhD	Colorado
Guiochon, G.A. (Distinguished Scientist, Science Alliance Center of Excellence), PhD	Université de Paris (France)
Hinde, R.J., PhD	Chicago
Kabalka G.W. (Robert H. Cole Professor, Alumni Distinguished Service Professor), PhD	Purdue
Kovac, J.D., PhD	Yale
Larese, J.Z., PhD	Wesleyan
Mays, J.W. (Distinguished Scientist, Science Alliance Center of Excellence), PhD	Akron
Pagni, R.M., PhD	Wisconsin
Schweitzer, G.K. (Alumni Distinguished Service Professor), PhD	Illinois
Sepaniak, M.J., PhD	Iowa State
Williams, T.F. (Alumni Distinguished Service Professor), PhD	London (UK)
Woods, III, C. (Associate to the Chancellor), PhD	North Carolina State
Xue, Z., PhD	UCLA

#### Associate Professors

Musfeldt, J.L., PhD	Florida
Schell, F.M., PhD	Indiana
Turner, J.F.C., PhD	Oxford (UK)

#### Assistant Professors

Best, M.D., PhD	Texas
Foister, S., PhD	California Institute of Technology
Lee, Y., PhD	Texas
Vogt, F., PhD	Karlsruhe (Germany)
Zhao, B., PhD	Akron

The Department of Chemistry presents to the next generation of chemists and chemically literate citizens an integrated program of teaching and research that will prepare them to respond responsibly to current and future national needs. To satisfy our diverse clientele, the educational program is continually improved and includes research, classroom, and laboratory activities. In addition, we endeavor to maintain local responsibilities in support of the university's mission for public service.

Students who desire to major in chemistry may select from either of two courses of study – Bachelor of Science or Bachelor of Science in Chemistry.

#### Placement in General Chemistry Sequences

The sequences which meet all of the requirements of a year of general chemistry and which serve as prerequisite for upper-division courses are 120-130 and 128-138; chemistry majors are strongly urged to take the latter sequence. Courses 100 and 110 emphasize organic and biochemistry, and may not be used as prerequisite for other chemistry courses. Chemistry 150 and 160 are designed to increase the chemistry literacy and consumer knowledge of students and may not be used as prerequisites for any other chemistry course.

It is possible to move from one sequence to another if permission for substitution is obtained in advance. For example, a student who finds a need to complete the 120-130 series after having completed 100 may substitute 100 for 120 with approval of the Department of Chemistry and may then take

130. Credit may be received for only one of the courses 100, 120, or 128.

In any chemistry course above the freshman level which has Chemistry 130 as a prerequisite, 110 may be used as a prerequisite with approval of the Department of Chemistry.

Chemistry 128-138 is an honors course designed for the student who has already made considerable progress in science. Class size is limited to promote faculty-student interaction. Selection is based on ACT scores, high school chemistry grade, and, if necessary, performance on a placement examination to be given during the first class meeting. A student receiving a passing grade below B in 128 will complete the year's work by taking 130.

Beginning students who have had high school chemistry and who have had additional experience (e.g. summer institute study, special research projects, home laboratory) are invited to apply during the summer to the head of the department for permission to take a proficiency examination in one or more semesters of general chemistry. If a satisfactory grade is made on the examination, credit will be allowed for the semester (or course) for which the exam was taken. The Department of Chemistry gives credit in general chemistry to students who present satisfactory scores on the Chemistry Advanced Placement Examination.

### Cooperative Program

A cooperative program is available to students who are chemistry majors. After the freshman year, the student alternates a semester in school with a semester in a job in the chemical industry. The program normally requires five years and involves a total of four work semesters and eight school semesters. Students are required to have at least a 2.50 average to enter and remain in the program. Some opportunity exists for students to enter the program later than the end of the freshman year. Interested students should make application to the head of the department at least one semester in advance of the beginning of the first work period. Further information will be supplied on request.

## BACHELOR OF SCIENCE IN CHEMISTRY • CHEMISTRY MAJOR

The Bachelor of Science in Chemistry is approved by the Committee on Professional Training of the American Chemical Society. It is designed to train students to go directly into positions in the chemical industry or to enter graduate study leading to positions in research and college teaching. A student in the Bachelor of Science in Chemistry program should, at the earliest opportunity, ask the Arts and Sciences Advising Center for assignment of a faculty advisor in the Department of Chemistry. For further information, contact the Head of Department of Chemistry, 552 Buehler Hall.

### Requirements for the Bachelor of Science in Chemistry • Chemistry Major

*Although not reflected in the showcase, students are required to meet the University General Education Requirement as stated in this catalog. Consult the College of Arts and Sciences Advising Services for updated information.*

First Year	Hours	Credit
Chemistry 120-130 or (preferably) 128-138	.....	.8
Mathematics 141-142	.....	.8
English Composition	.....	.6
<sup>1</sup> Foreign Language (intermediate level sequence)	.....	.6-10
<sup>2</sup> Distribution	.....	.3
<b>Second Year</b>		
Chemistry 240	.....	.2
Chemistry 230	.....	.3
Chemistry 350-360	.....	.6
Chemistry 369	.....	.2
Mathematics 241 and either 231 or 251	.....	.7
Physics 135-136 or 137-138	.....	.8-10
<sup>2</sup> Distribution	.....	.3

### Third Year

Chemistry 310-320	.....	.6
Chemistry 319-329	.....	.3
Chemistry 473-483	.....	.6
Chemistry 479-489	.....	.4
<sup>2</sup> Distribution	.....	.9
<sup>3</sup> Electives	.....	.3

### Fourth Year

Chemistry 430	.....	.3
Chemistry 439	.....	.1
Chemistry 406	.....	.1
Chemistry 400	.....	.3
Biochemistry and Cellular and Molecular Biology 401	.....	.4
<sup>4</sup> Chemistry Electives	.....	.3
<sup>2</sup> Distribution	.....	.9
<sup>3</sup> Electives	.....	.9

**Total 126-132**

- 1 Preferably chosen from German, French, Russian or Japanese; the College of Arts and Sciences requires that a student demonstrate intermediate-level competence in whatever foreign language is chosen.
- 2 The distribution requirements of the College of Arts and Sciences are satisfied by taking non-U. S. history (6 hours), social science (6 hours), humanities (6 hours), and upper level distribution (3 hours in U.S. studies and 3 hours in foreign studies). The number of credit hours shown in each year of the curriculum are merely intended as guidelines.
- 3 It is recommended that a portion of these elective hours be applied to advanced courses in biochemistry and cellular and molecular biology, mathematics, physics, or chemical, metallurgical, and polymer engineering.
- 4 To be chosen from Chemistry 400, 401, 408, 420, 450, and 490.

## BACHELOR OF SCIENCE • CHEMISTRY MAJOR

The Bachelor of Science degree is available to students who desire a more flexible program. Prerequisites to the major are Chemistry 120-130 or 128-138 and Mathematics 141-142 or 151-152. Corequisites to the major are Physics 221-222, 135-136, or 137-138.

The major consists of Chemistry 240, 310, 319, 350-360, 369, 471-481 or 473-483, 479 and 10 hours of additional work in chemistry numbered above 200 that includes at least one laboratory course or lecture/laboratory course; up to 4 hours of Biochemistry and Cellular and Molecular Biology 401-402 or Geology 460 may be applied to the 10-hour requirement.

For students planning careers in chemistry, the recommended courses (from the list above) are Mathematics 141-142, Physics 135-136 or 137-138, and Chemistry 473-483; although not required, certain additional courses are strongly suggested for students planning to become chemists: Mathematics 241 and Chemistry 230, 320, 329, and 406. Because professional chemists need a reading knowledge of foreign languages, intermediate level competency should be acquired in German, French, Russian or Japanese. Students who are undecided about their career goals should consult the head of the department at the earliest opportunity. Unlike the Bachelor of Science in Chemistry, the regular Bachelor of Science degree is not approved by the Committee on Professional Training of the American Chemical Society.

## HONORS CONCENTRATION

Candidates for the honors concentration in chemistry must fulfill all of the requirements for either the Bachelor of Science in Chemistry or the regular Bachelor of Science degree and must also satisfy the following stipulations: they must complete with grades of C or better Mathematics 141-142, Physics 135-136 or 137-138, and Chemistry 473-483, 400, and 408; and they must have an overall university GPA of at least 3.00 with a GPA in chemistry courses of at least 3.30.

## Minor in Chemistry

A minor in chemistry consists of 15 hours of chemistry courses numbered above 200 including 310, 319 (4 hours) and at least one of the following sequences: 350-360, 369 (8 hours); or 471-481, 479 (8 hours), or 473-483, 479 (8 hours).

## DEPARTMENT OF CLASSICS

<http://web.utk.edu/~classics/>

David W. Tandy, Head

### Professors

Craig, C.P. (Lindsay Young Professor), PhD .....North Carolina  
Martin, S.D. (Senior Vice Provost), PhD .....Michigan  
Tandy, D.W. (Distinguished Professor of Humanities), PhD .....Yale

### Associate Professor

Sutherland, E.H., PhD .....California (Berkeley)

### Assistant Professors

Graninger, C.D., PhD .....Cornell  
Lafferty, M.K., PhD .....Toronto (Canada)  
Sklenar, R.J., PhD .....Michigan  
Van de Moortel, A., PhD .....Bryn Mawr

### Research Professors

Gesell, G.C., PhD .....North Carolina  
Langdon, M.K., PhD .....Pennsylvania

### Lecturers

Bartera, S., MA .....Urbino (Italy)  
Downey, S.J., PhD .....Toronto (Canada)

### Adjunct Faculty

Dessel, J.P., PhD .....Arizona  
Dzon, M., PhD .....Toronto (Canada)  
Fitzgerald, J.L., PhD .....Chicago  
Heffernan, T.J., PhD .....Cambridge  
Jones, D.W., PhD .....Chicago  
Kulikowski, M., PhD .....Toronto (Canada)  
Shepardson, C., PhD .....Duke  
Stiebert, J., PhD .....Glasgow (UK)

The department's programs are designed to allow students to understand the foundations of the western cultural tradition. This is done through a focus on the classical languages and literatures, archaeology, art, mythology and religion, political and social history. Through these studies, students develop skills in critical thinking, reading, writing and speaking. They also develop a sense of the ways in which both shared traditions and personal creativity inform one's choices, and of the opportunities for good citizenship in a complex world.

## CLASSICS MAJOR

### CLASSICAL CIVILIZATION CONCENTRATION

The concentration in classical civilization consists of 27 hours. The required core of the major is Classics 201 plus any 9 hours from Classics 221-222, 232, 253. The remaining 15 hours may be from Classics 261-264, 251-252, any Classics course numbered 300 or above, History 366, or Philosophy 320. Students are encouraged to satisfy the foreign language requirement with Greek or Latin.

### HONORS CLASSICAL CIVILIZATION CONCENTRATION

The honors classical civilization concentration consists of 29 hours. The required core of the concentration is Classics 201 plus 9 hours from the following – Classics 221-222, 232, 253. Fifteen hours must include Classics 251-252 or 261-264 with the remaining 9 hours from any Classics course numbered 300 or above, History 366, or Philosophy 320. The student must pass Classics 201 with a B+ or better and the final course in the intermediate Latin or Greek sequence (252 or 264) with a B+ or better. To graduate with honors, the student must maintain a GPA of at least 3.50 in classics courses and a minimum cumulative GPA of 3.00. The student must also present an honors thesis, for which 2 hours of independent study credit may be earned.

## GREEK CONCENTRATION

The concentration in Greek consists of 27 hours including 18 hours of Greek language courses numbered above 200 plus 9 hours to be from any courses in the Classics Department (other than Classics 121-122, 150, 201, or 273).

## HONORS GREEK CONCENTRATION

The honors Greek concentration consists of 29 hours. Eighteen hours of Greek language courses numbered above 200 are required, plus 9 hours from the following – any courses in the Classics Department (other than 121-122, 201, 273). The student must maintain a minimum GPA of 3.50 in Greek language courses and a minimum cumulative GPA of 3.00. In addition, of the 9 hours described above, six must be in courses numbered 300 or higher. The student must also present an honors thesis, for which 2 hours of independent study credit may be earned.

## LATIN CONCENTRATION

The concentration in Latin consists of 27 hours including 18 hours of Latin language courses numbered above 200 plus 9 hours to be from any courses in the Classics Department (other than 111-112, 150, 201, or 273).

## HONORS LATIN CONCENTRATION

The honors Latin concentration consists of 29 hours. Eighteen hours of Latin language courses numbered above 200 are required, plus 9 from the following – any courses in the Classics Department (other than 111-112, 150, 201, 273). The student must maintain a minimum GPA of 3.50 in Latin language courses and a minimum cumulative GPA of 3.00. In addition, of the 9 hours described above, 6 must be in courses numbered 300 or higher. The student must also present an honors thesis, for which 2 hours of independent study credit may be earned.

### Placement Examination

Students who transfer to the University of Tennessee, Knoxville, from other colleges and students who enter with high school units in Latin should register for the courses in which they would normally be placed on the basis of such credits. During freshman orientation, a placement test will be given; and students will be advised if a change in registration is indicated by the results.

### Proficiency Examinations

Students who have acquired a knowledge of Latin through private study or tutoring should request from the department a proficiency test. A student who earns a grade of B or better in this examination is eligible for credit toward graduation. A student who omits any course in a sequence may receive credit for it by passing the appropriate proficiency examination.

## Minor in Classical Civilization

A minor in classical civilization consists of 18 hours including Classics 201 plus any 6 hours from Classics 221-222, 232, 253. The remaining 9 hours may be from Classics 261-264, 251-252, any Classics course numbered 300 or above, History 366, or Philosophy 320.

## Minor in Greek

The Greek minor consists of 18 hours including 12 hours of Greek language courses numbered above 200, and 6 hours chosen from Classics 221-222, 436, 442.

## Minor in Latin

The Latin minor consists of 18 hours including 12 hours of Latin language courses numbered above 200, and 6 hours from Classics 221-222, 436, 442.