



THE UNIVERSITY OF TEXAS AT AUSTIN

COLLEGE OF
NATURAL
SCIENCES

1979–1981

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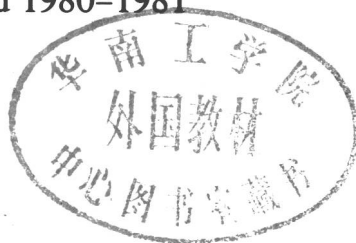
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College of
NATURAL
SCIENCES

1977-1978 and 1978-1979

WITH ANNOUNCEMENTS FOR
1979-1980 and 1980-1981



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THE UNIVERSITY OF TEXAS AT AUSTIN
AUSTIN, TEXAS

The benefits of education and of useful knowledge, generally diffused through a community, are essential to the preservation of a free government.

SAM HOUSTON

Cultivated mind is the guardian genius of Democracy, and while guided and controlled by virtue, the noblest attribute of man. It is the only dictator that freemen acknowledge, and the only security which freemen desire.

MIRABEAU B. LAMAR

Where liberty has arisen, learning must be cherished—or liberty itself becomes a fragile thing.

LYNDON B. JOHNSON

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College of Natural Sciences

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1978-1979

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SOURCES OF INFORMATION

This catalogue, published every two years, describes the undergraduate programs offered by the College of Natural Sciences. A similar catalogue is published by the College of Liberal Arts.

The other colleges and schools of The University of Texas at Austin also provide catalogues, and, within the limits of Plan I (see p. 16), liberal arts students may take any number of their courses; with the approval of the appropriate deans, they may major in a field outside arts and sciences.

Information, rules, and regulations applicable to all the colleges and schools of the University can be found in the General Information bulletin, published yearly. This bulletin contains specific details about such topics as the following:

- History and Organization of the University

- Admission and Registration

- Fees and Deposits

- Academic Regulations

 - Adding or dropping courses, and changing sections

 - Class attendance

 - Probation, dismissal, and withdrawal

 - Reporting change of address and/or telephone

 - Tests for credit by examination

 - Examinations, grades, and reports

- Counseling and Psychological Services

- Student Life

 - Activities

 - Motor vehicle regulations

 - Housing

 - Financial aid

 - Student Health Center

- Libraries, museums, and special study facilities

- Ex-Students' Association

Every student is urged to get these basic publications (available for a nominal fee in the Registrar's Office) and to make himself familiar with them. He should keep in mind that it is to his advantage—and that *it is also his responsibility*—to be aware of University regulations and to be guided by them.

For information not provided in these publications, students are invited to consult the Student Office, College of Natural Sciences.



I. TO EACH STUDENT IN THE ARTS AND SCIENCES PROGRAM

The academic program offered cooperatively by the College of Natural Sciences and the College of Liberal Arts provides what is sometimes referred to as a "liberal arts" education; the designation "arts and sciences" is more apt and more often used. No matter which area of knowledge you intend to specialize in, you will be studying in both colleges. These colleges work together closely to ensure that the individual interests and needs of the many students pursuing an arts and sciences program of study are provided for in the most effective way.

While you are a college student, your education will take place both within and outside the context of formal study. Nevertheless, your life for four years will center on some fifteen class meetings a week and the many academic demands emanating from each of these. Nothing is more important, therefore, than an intelligent and judicious choice of courses. The possibilities for course selection and combination are almost without limit. Some guidelines for developing a coherent plan of study are provided by the lower-division and major requirements, by sequential prerequisites, and by optional patterns of emphasis (see pp. 16-19). Through studying the catalogues you will learn that there are departmental majors, areas of concentration, and interdepartmental programs—all designed in such a way as to enable every student to study at least one field "in depth." These programs are sufficiently broad in scope to allow students in the same major to develop quite different plans of study in pursuit of their individual interests and goals. You should choose the courses that will challenge you to mature intellectually while at the same time contributing to your long-term objectives.

Arts and sciences students are required to take a certain number of courses in the natural sciences, the social and behavioral sciences, and the humanities. Consequently, whatever field you may choose to major in, you will learn something about the basic differences in the ways questions are raised and answered in several fields of inquiry, and about the various techniques for validating the answers and putting the results to use. At the same time, you will gain some of the philosophical and historical perspectives that illuminate and give form to general or specialized knowledge and help to reveal its relevance.

The assumption is sometimes made by both teachers and students that independent and creative study is exclusively for the highly gifted. In fact, the primary condition is that the student be highly motivated, although he must also demonstrate ability. The departments comprising the two arts and sciences colleges encourage all qualified students to work independently—not only in special honors courses and seminars, and in conference, studio, or laboratory work, but in their regular courses as well. The student is free to define his major; he is also free to determine whether a given assignment is to be an adventure or a chore—whether he will develop its latent possibilities or merely satisfy its explicit demands. True creativity presupposes more than a gift for innovation; it requires an unceasing commitment to thinking and working at one's very highest level.

As the student moves toward competency in his chosen field, his mind is progressively sharpened, disciplined, and enriched. The arts and sciences graduate who leaves with an enhanced understanding of himself and his fellow men, of his cultural and historical heritage, of the world and the universe in which he lives, and of the moral value conducive to significant living, will have made the most of his education, having gained something over and above the objective of vocational preparedness.

II. DEGREES, PROGRAMS, AND REQUIREMENTS IN THE COLLEGE

In response to the needs of individual students, the College of Natural Sciences offers a choice of nine degree programs and in cooperation with other colleges offers five preprofessional programs. The Bachelor of Science in Home Economics also provides two separate programs.

DEGREES OFFERED

1. Bachelor of Arts

Plan I. The basic arts and sciences degree program is designed to provide students the opportunity to achieve a truly liberal education. For this degree students may major in the departments within the College of Natural Sciences or the College of Liberal Arts; such students, with the approval of the appropriate deans, may select a major offered by one of the other colleges or schools in The University of Texas at Austin.

There is also a *Plan II* program leading to the Bachelor of Arts degree. This is a broad liberal arts program for students selected for their high scholastic ability and motivation in high school. The Plan II program is more flexible and more extensive in its scope than Plan I. The Plan II program places additional emphasis on the humanities, although it also permits a concentration equivalent to a major in science or social science for students with those interests.

The Plan II program is offered by the College of Liberal Arts. Complete details of the program are given in the catalogue for that college.

2. Bachelor of Science in Biology

(See pp. 25-27 for description and requirements.)

3. Bachelor of Science in Chemistry

(See pp. 27-29 for description and requirements.)

4. Bachelor of Science in Geological Sciences

(See pp. 29-31 for description and requirements.)

5. Bachelor of Science in Home Economics

Option I: For home-making.

(See pp. 32-33 for description and requirements.)

Options II-VII: For professional training.

(See pp. 33-38 for description and requirements.)

6. Bachelor of Science in Mathematics

(See pp. 38-40 for description and requirements.)

7. Bachelor of Science in Medical Technology

(See pp. 40-41 for description and requirements.)

8. Bachelor of Science in Physics

(See pp. 42-43 for description and requirements.)

9. Bachelor of Science in Zoology

(See pp. 43-44 for description and requirements.)

PREPROFESSIONAL PROGRAMS

1. Preparation for Dentistry, Medicine, Veterinary Medicine, and Allied Health Professions
2. Preparation for Law
3. Preparation for Teaching in High School
4. Preparation for Library Work
5. Preparation for Social Work

STUDENT RESPONSIBILITY

Each student is held responsible for knowing degree requirements, for enrolling in courses that fit into his degree program, and for taking courses in the proper sequence to ensure orderly progression of his work. He is also held responsible for knowing University regulations regarding the standard of work required to continue in the University, as well as the regulations dealing with scholastic probation and enforced withdrawal.

Degree requirements are listed under two categories: (1) The General Degree Requirements and Limitations for any degree offered by the College of Natural Sciences, and (2) the Prescribed Work and Special Requirements for a specific degree. For a complete list of requirements for a particular degree, therefore, the student should combine the General Requirements with the Prescribed Work and Special Requirements listed under the specific degree for which he is applying.

GENERAL DEGREE REQUIREMENTS AND LIMITATIONS

1. Degrees will be conferred only on dates publicly announced.
2. To receive a degree a student must be in residence in the classroom at The University of Texas at Austin for at least two long-session semesters, or the equivalent period of residence, and must complete in residence in the classroom at least thirty semester hours counting toward the degree. For the B.A. degree, Plan I, these thirty hours must include at least eighteen semester hours in the major subject. For all degrees *other than* the B.A. degree, Plan I, these thirty semester hours must be in courses offered in arts and sciences and counting toward the degree.
3. Twenty-four of the last thirty semester hours offered for credit for an undergraduate degree must be completed in residence,* with the exception that among The University of Texas System components, a student may with the approval of the appropriate dean transfer additional course work to his program at the degree-granting institution. A student seeking an exception to this regulation must file at the degree-granting institution a written petition with his academic dean, who may approve the transfer of additional credit. For the degree of Bachelor of Science in Medical Technology, this rule applies to the academic work.

*The term "in residence" is defined as in residence at the component which ultimately grants the degree. Residence credit does not include credit by examination or courses taken by extension or correspondence.

4. At least six hours of advanced course work in the major field of study must be completed in residence.* Additional hours in the professional or major sequence in many cases are required by individual schools or colleges.

5. No credit earned by correspondence instruction from The University of Texas at Austin or elsewhere, and no credit earned by enrollment at another college or university or in Evening Classes in the Division of Continuing Education while the student is currently enrolled for residence work at The University of Texas at Austin, will be counted toward a degree in the College of Natural Sciences unless specifically approved in advance by the Dean of the College of Natural Sciences, or his representative. Not more than thirty per cent of the semester hours required for any degree offered in the College of Natural Sciences may be done by correspondence.

6. Undergraduate students who have received at least thirty semester hours of college credit shall be permitted to take not more than sixteen semester hours on a Pass-Fail basis to count toward their degree. They may not take more than two courses a semester on this basis. As a general rule Pass-Fail courses are restricted to electives; for exceptions within the major, students should check with the department before registration.

7. Since the major subject is not shown on the diploma, it is not possible for a student to receive a second Bachelor of Arts degree from The University of Texas at Austin. No second bachelor's degree (Bachelor of Science in Physics, Bachelor of Science in Architectural Studies, etc.) will be conferred until the candidate has completed at least twenty-four semester hours in addition to those counted toward the bachelor's degree which requires the higher number of semester hours of credit.

8. Physical activity courses (PED 101-110C) may not be counted for degree credit in the Colleges of Natural Sciences or Liberal Arts. See "Physical Activity Courses," below.

9. An Air Force, Army, or Naval Reserve Officers Training Corps student who elects the basic and/or advanced program in air force science, military science, or naval science will not be approved for graduation until his Government contract is completed, unless he is released from the ROTC. (See the section describing the Air Force, Army, and Naval Reserve Officers Training Corps in the General Information bulletin.)

10. Nine semester hours of air force science, military science, or naval science courses may be counted for degree credit as free lower-division electives (in degree programs that have room for such electives) by students who complete the third and fourth years of the ROTC program (see below).

11. No more than twelve semester hours of Bible may be counted toward a degree.

12. Music 200 cannot be counted toward any degree offered in the College of Natural Sciences. (Other preparatory courses, such as Music 200J, 200K, 201, may be counted toward degrees offered in the College of Natural Sciences.) Typewriting courses cannot be counted toward any degree in the College of Natural Sciences.

*The term, "in residence," is defined as in residence at the component which ultimately grants the degree. Residence credit does not include credit by examination or courses taken by extension or correspondence.

LEGISLATIVE REQUIREMENT

House Bill 935, passed by the Sixtieth Legislature, provides that no person may receive an undergraduate degree unless he has taken and passed six semester hours in American government and six semester hours in American history. Three hours of Texas history may be substituted for half of the requirement in history. No more than three semester hours of credit by examination in government and three in history may be used to satisfy this requirement.

PHYSICAL ACTIVITY COURSES

Physical activity courses at The University of Texas at Austin are offered by the Department of Physical and Health Education on an elective basis. A wide variety of activities taught by faculty specialists is available to enable students to make reasonable and informed decisions concerning their future interest and participation in physical activities. More than thirty activities are taught at beginning, intermediate, or advanced levels in the areas of aquatics and related aquatic activities, dance, racketsports, dual activities, conditioning and fitness, individual and team activities, and rehabilitation programs.

Semester hour credit.—Physical activity courses offered by the Department of Physical and Health Education meet the equivalent of three clock hours per week for one semester hour of credit.

Pass-Fail option.—Students may elect the Pass-Fail basis for credit in physical activity courses. Students who choose not to exercise this option will receive credit on a letter-grade basis.

Hours earned by electing physical activity courses may be counted in the lower-division hours required for the degree as approved in the degree programs of the individual colleges.

Physical activity courses (PED 101–110C) may not be counted for degree credit in the Colleges of Natural Sciences or Liberal Arts. However, these hours are counted among those for which the student is currently enrolled, and the grades awarded are included in calculating the grade-point average.

BIBLE COURSE CREDITS TOWARD DEGREES

The Biblical Studies Association, a local organization made up of instructors in the various Bible chairs about the campus, offers courses in Bible and related topics.

These courses may be counted as lower-division electives in Natural Sciences degree programs having room for such electives. Not more than twelve semester hours of work may be counted toward any degree offered by The University of Texas at Austin. The regulations governing the offering of these courses can be found in the General Information bulletin.

ROTC COURSE CREDITS TOWARD DEGREES

Not more than nine semester hours of credit for ROTC (Military Science, Naval Science, or Air Force Science) courses may be counted toward any degree in the College of Natural Sciences. Such credit hours can be used (1) only as

lower-division electives in degree programs that have room for such electives, and (2) only by students who have successfully completed the third and fourth years of the ROTC program.

GRADUATION UNDER A PARTICULAR CATALOGUE

To receive a degree in the College of Natural Sciences, a student must fulfill all requirements for that degree as set forth in a catalogue under which he is entitled to graduate. He should understand, however, that he has several choices: (1) he may graduate under the current catalogue, (2) he may graduate under the catalogue in force the year he first registered in The University of Texas at Austin (within the limitations stated in the second paragraph below), (3) he may graduate under the catalogue for any subsequent year in which he was registered in the College of Natural Sciences or the College of Liberal Arts (formerly the College of Humanities, the College of Social and Behavioral Sciences, and the Division of General and Comparative Studies) (again, within the limitations stated in the second paragraph below), (4) if he registered in The University of Texas at Austin for the first time during a summer session, he may choose to graduate under the catalogue governing the preceding long session or the one for the next long session, (5) if by March 1 of any year a student completes at least twelve semester hours in correspondence courses from The University of Texas at Austin, and if this work can be counted toward his degree, the student may graduate under the catalogue applying to that year, or (6) students who transfer to the College of Natural Sciences at The University of Texas at Austin from an accredited public Texas junior college may elect to use the catalogue in force at the time they first enrolled in junior college with the intent of being natural sciences majors.

All of these provisions are subject to the limitation that all requirements for a degree in the College of Natural Sciences must be completed within six years of the date of the catalogue chosen. If a student leaves school to enter military service in a period of emergency, the six-year period is exclusive of his time spent in the service.

APPLYING FOR A DEGREE: THE DEGREE CHECK AND THE GRADUATION APPLICATION FORM

At some time between the completion of forty-five and sixty semester hours of credit the student is urged to request a Degree Check in the Student Office, College of Natural Sciences. Upon completion of sixty semester hours of credit the student *must* request a Degree Check. The Degree Check is prepared in the Dean's Office from the application and a photostat of the student's record.

The student is then notified of the courses he lacks and the requirements he must satisfy to receive his degree. The Degree Check normally provides an accurate check of requirements, but the student is responsible (1) for knowing the exact requirements for a particular degree as stated in a catalogue under which he is entitled to graduate, and (2) for registering so as to satisfy all requirements of that catalogue. *Since the student is responsible for correct registration toward the fulfillment of his degree program*, he should seek official ruling, before registration, in the Student Office of the College of Natural Sciences if he is in doubt about any requirement.

In the long-session or summer session in which he is to receive the degree, a candidate must be registered in The University of Texas at Austin and must file a graduation application form in the Student Office, College of Natural Sciences. This should be done at the time of registration for the last semester, if possible, but in no event later than the last day a student may withdraw from the school or drop a course for academic reasons. During the long session, this date falls about midsemester; in the summer, it falls during the second term. (See the current official calendar for exact dates.) No degree will be conferred unless the graduation application form has been filed on time.

Every candidate is urged to attend the Spring Commencement Exercises when graduates from the previous Summer Session and Fall Semester are recognized with the Spring Semester graduates.

GRADUATE CREDIT FOR WORK DURING THE LAST UNDERGRADUATE SEMESTER

Undergraduates are normally barred from graduate courses; however, undergraduate students may under the following conditions reserve courses for graduate credit in their last semester:

1. The undergraduate in his final semester must lack no more than twelve semester hours (or six semester hours in a summer session) of work to complete all requirements for his (first) bachelor's degree.

2. These twelve hours (or less) must all be completed in the same semester or summer session in which he is taking the graduate courses.

3. Total registration for all work must not exceed fifteen semester hours (or twelve hours in a summer session).

4. All courses reserved for graduate credit must be approved *before the end of the first four weeks* of the semester (first two weeks of the summer session) by the graduate adviser, the Graduate Dean, and the dean of the college in which the student is enrolled.

5. The undergraduate who reserves courses must graduate at the end of that semester in order to receive graduate credit for courses reserved.

The undergraduate may not count his work in graduate courses toward his bachelor's degree. These courses will be *reserved for credit* toward a graduate degree. A form for reserving courses, which needs the signature of the dean of the undergraduate college and the official graduate adviser in the student's major area, must be secured from the Graduate Office.

Course Fees

Special course fees are sometimes assessed at registration for specific courses. These course fees are printed in the *Course Schedule*, issued each semester prior to registration.

For each laboratory course a fee is charged in an amount to cover in general the cost of laboratory materials and supplies used by a student; however, such charge per student shall be not less than two dollars (\$2) nor more than eight dollars (\$8) for each laboratory course in any one semester or summer term.

In a like manner a supplementary fee may be assessed in a course in art, architecture, drama, speech, or music where individual coaching or instruction is the usual method of instruction, such supplementary fee not to exceed seventy-five dollars (\$75) per student per semester or summer term.

REQUIREMENTS FOR THE DEGREE OF BACHELOR OF ARTS PLAN I

The requirements for the B.A. degree under Plan I are designed to give each student flexibility in the selection of courses to meet his individual interests and needs. Except for those limits imposed by specific requirements in the Plan I degree program, there is no restriction on the number of courses a student can take in other colleges and schools within The University of Texas at Austin.

Students in the Bachelor of Arts program, Plan I, are permitted, with the approval of the deans of the colleges or schools involved, to major in departments in other colleges and schools within The University of Texas at Austin.

SUMMARY OF THE BACHELOR OF ARTS DEGREE (B.A.), PLAN I

The following is a brief overview of the Bachelor of Arts (B.A.), Plan I, degree; for detailed regulations see Sections A, B, C, and D below.

A total of 120 semester hours is required for the B.A. degree, Plan I. Of the 120 hours, thirty-six hours must be upper-division course work. (A course is upper-division if its middle digit is 2 through 7; for example GOV 323 is upper-division, M 808 is lower-division.) At least thirty hours, including eighteen upper-division hours, and at least twenty-four of the last thirty semester hours must be taken in residence in the classroom at The University of Texas at Austin. Provided residency rules are met, credits may be earned by examination, correspondence (up to thirty per cent of the degree), or work transferred from another institution subject to approval of the dean.

Three categories of work must be satisfied: Prescribed work, major requirements, and electives to complete the total requirement of 120 semester hours.

PREScribed WORK

For all majors in B.A. degree, Plan I, there are four specific area requirements comprising about one-half of the entire degree:

Area A (English and foreign language): Nine hours of English must be taken from one of the prescribed sequences. The foreign language requirement is stated in terms of proficiency; the actual number of hours varies with the language selected and previous knowledge in the language. (See pp. 17-18.)

Area B (social sciences): Eighteen hours must be selected, including courses from four different subjects. Of these eighteen hours, six hours must be in American history and six hours must be in American government. (See p. 18.)

Area C (natural sciences): Fifteen hours are required, with no more than nine of the fifteen hours in any one subject. (See p. 19 and consult course lists in the Student Office.)

Area D (general culture): Six hours are required. (See p. 19 and consult course lists in the Student Office.)

Courses in the major may be used to satisfy area requirements unless expressly prohibited. A course taken to meet the requirements of one area cannot also be