Visiting Artists and Artists-in-Residence:

The Art department is widely known for the consistent level of excellence of its programs. Aside from the obvious attribution to the overall excellence of quality of its permanent in-residence artist teaching staff, in order to insure the continuing expansion of learning opportunities available to students, the art department regularly brings to the campus’ studios established professional working artists as supporting resources for its art-teaching activities. Such artists provide a unique supplemental extra-dimension to the arts studies programs of particular value to students.

Among those artists who have articulated to students valuable first-hand information about, and who have convincingly on-the-spot demonstrated direct experience with, current developments in the arts: Scott Bartlett, Larry Bell, Friedl Dzubas, Allen Jones, Nicholas Krushenick, Daniel Lang, Paul Sarkisian, Lucas Samaras, Robert Irwin, James Rosenquist, Robert Rauschenberg, Phillip Perlstein.

DANCE (DAN)

The dance curriculum is designed for students interested in dance as an art form. Their objectives may be to continue their education in graduate school, to teach in a college or a private school, or to pursue a career as a performer and/or choreographer.

Major concerts are given during each quarter as well as workshop performances. Through the Florida Center for the Arts, major dance companies are brought to the campus giving students the opportunity of taking classes with the professional dancers.

Requirements for the B.A. Degree:

Modern majors are required to take, for a total of 63 hours:

- DAN 201 (3)
- DAN 305 (3)
- DAN 403 (3)
- DAN 202 (3)
- DAN 311 (1)
- DAN 413 (3)
- DAN 203 (3)
- (three credits)
- DAN 453 (3)
- DAN 301 (4)
- DAN 351 (3)
- DAN 463 (3)
- (eight credits)
- DAN 401 (5)
- DAN 464 (3)
- DAN 302 (4)
- (15 credits)
- DAN 303 (3)

Ballet majors are required to take, for a total of 63 hours:

- DAN 201 (3)
- DAN 303 (3)
- DAN 313 (3)
- DAN 202 (3)
- DAN 305 (3)
- DAN 402 (5)
- DAN 203 (3)
- DAN 311 (1)
- (15 credits)
- DAN 301 (4)
- (three credits)
- DAN 413 (3)
- DAN 302 (4)
- *DAN 312 (1)
- DAN 453 (3)
- (eight credits)
- (six credits)
- DAN 464 (3)

Entrance to all technique courses will be by jury examination.

Dance majors are also required to take 35 hours of free electives. Of this time, a maximum of 28 hours may be in the Dance department.

Special requirements for dance majors come to 22 hours. Nine hours must be taken in the other departments of the College of Fine Arts. The remaining 13 hours will be assigned to the student based on his individual needs as determined by the department.

The University’s General Distribution requirement consisting of 60 hours may be found on page 32. The above requirements total 180 hours. Junior dance majors are required to do a dance project.

Senior dance majors are required to choreograph and perform in a senior dance program. Prospective students must contact the Dance department to arrange for an audition prior to registration. Beginning courses may only be repeated three times. A student must audition each quarter to stay at his present level or to advance to a higher level.

Until students are accepted into Intermediate Modern or Intermediate Ballet they will be considered probationary Dance majors.

A dance major is expected to keep his/her weight at a level that is aesthetically acceptable to the Dance faculty for classroom training and for performances.

In pursuit of the degree, a student must abide by the following regulations:

A. Students must not use classroom facilities without permission of faculty. “Classroom” refers to studio space, theatre space, or any other space designated for dance practice, rehearsal, or performance. “Facilities” refers to all technical equipment associated with either dance practice, rehearsal, performance (such as pianos, other musical instruments, tape recorders, stereo equipment, and any other equipment or sets).

B. Each student utilizing a piece of equipment which is the property of the Dance department as mentioned above is held liable for any loss or damage to equipment.

C. Students may not remove any facilities from designated classroom areas.

Students should refer to page 93 for graduation requirements.

Visiting Artists and Artists-in-Residence:

By supplementing its excellent on-going regular staff-instructed dance curriculum with other professional resources made available through the Visiting Artist and Artist-in-Residence programs, the Dance department provides for dance students an overall dynamic program for practice, study and learning.

An impressively lengthy list of the extraordinary individual dance and dance company participation in one or more programs includes:

- Murray Louis Dance Co.
- First Chamber Dance Co.
- Claude Kipnis Mime Theatre
- Louis Falco Dance Co.
- Nikolai Dance Theatre
- Kerela Kalamandalam Co.
- Dance Theatre of Harlem
- Merce Cunningham Dance Co.
- Alvin Alley American Dance Theatre
- Don Redlich Dance Co.
- polish Mime Ballet Theatre
- Viola Farber Dance Co.
- Paul Taylor Dance Co.
- The Phakavali Dancers of Thailand
- Royes Fernandez
- Jacques D’Amboise
- Lucas Hoving Dance Co.
- New Caledonia Singers and Dancers

*Six quarters of Pointe Technique (women), or six quarters of Partner of Men’s classes.

MUSIC

The Departmental Major:

The music curriculum is designed for those students gifted in the performance and/or composition of music. Candidates for a major in music are required to pass an entrance examination
(audition) in their respective performance area. Composition candidates are required to submit appropriate scores and/or tapes of their compositions for faculty appraisal. All new registrants are also required to take a placement examination in music theory and literature. Students may obtain dates and times for these examinations from the music department office. Completion of these examinations is required before registration in music courses can be permitted.

**Academic Programs Offered Include:**

Bachelor of Arts degree with areas in Performance (voice, piano and orchestral instruments) Composition.

**Requirements for the B.A. Degree:**

All students seeking a degree in music are required to (1) complete successfully the secondary piano requirements as defined by the music faculty, (2) present a partial public recital during their junior year, (3) present a complete public recital during their senior year, (4) present a record of satisfactory recital attendance during each of the quarters of study at the university. The specific requirements for satisfactory attendance is set by the music faculty. These requirements are in addition to the actual course requirements listed below.

A total of 96 hours is required as follows:

**MUSIC THEORY (30)**

- MUS 201 (3) MUS 222 (2) MUS 303 (3)
- MUS 202 (3) MUS 223 (2) MUS 321 (2)
- MUS 203 (3) MUS 301 (3) MUS 322 (2)
- MUS 221 (2) MUS 302 (3) MUS 323 (2)

**MUSIC LITERATURE (6)**

- MUS 231 (2) MUS 232 (2) MUS 233 (2)

**MUSIC HISTORY (9)**

- MUS 401 (3) MUS 402 (3) MUS 403 (3)

For applied majors, 36 hours of applied music is required:

- MUS 204 (9) MUS 404 (9) MUS 454 (9)
- MUS 304 (9)

One ensemble per quarter is required in conjunction with applied music enrollment.

Promotion to the next higher level in applied music is made upon the recommendation of the faculty in the student's respective performance area based upon a jury examination conducted by that area faculty.

One ensemble per quarter is required in conjunction with applied music enrollment.

**For Composition Majors:**

Undergraduates majoring in composition must complete a minimum of 36 credit hours from among the following sequence of courses including MUS 307 and at least one quarter of MUS 458, satisfying all necessary prerequisites for all courses:

- MUS 205 Introduction to Electronic Music (3)
- MUS 208 Composition (3)
- MUS 308 Composition (3)
- MUS 309, 310, 311 Contemporary Techniques of Composition (3,3,3)
- MUS 408 Composition (3)
- MUS 455, 456, 457 Electronic Music—Real-Time Performance (3,3,3)
- MUS 458 Composition (3)
- MUS 459 Seminar in New Musical Systems (3)
- MUS 410, 411 Orchestration (3,3)

In consultation with, and with the approval of the entire composition faculty, the senior requirement for composition majors is to be satisfied in any of the following three ways, or in other ways so designated by the composition faculty: (1) a complete public concert of works by the student composer, (2) the public performance of several compositions in various concerts throughout the composer's senior year, (3) the formal presentation to the composition faculty of an extensive portfolio of compositions plus the public performance of at least one of these works during the senior year.

**The Faculty:**

USF's superior music faculty has been carefully chosen for its training, performing ability, and ability to teach. It is in every sense a team. This achievement has been demonstrated by such fine musical ensembles as the Faculty String Quartet, the Faculty Brass Quintet, the Ars Nova (faculty) Woodwind Quintet and the Faculty Chamber Players.

**Unique Learning Opportunities:**

The music department at the University of South Florida offers the student the opportunity to study with a distinguished faculty, work with the newest in creative equipment, and to be in the company of other superior music students for an extensive, exciting and exacting period of study.

**SYCOM** — The Systems Complex for the Studio and Performing Arts offers the student the opportunity to work with an unusually well developed electronic facility for creative research and compositional opportunity.

**Visiting Artists and Artists-In-Residence:**

The Department of Music utilizes guest composers, conductors, and performing musicians to enhance its offerings in terms of teaching faculty, forum appearances, and the conducting of musical programs, symposia, and clinics. Prominent musicians who have appeared in the past are Howard Hanson, Norman Dello Joio, Randall Thompson, Virgil Thomson, David Ward-Steinman, Walter Tlampler, Fred Hemke, Eleazar de Carvahlo, Thomas Nee, Lucas Foss, Maurice Andre, John Haynie, Jean Pierre Rampal, and Julius Baker.

**Student Organizations:**

Sigma Alpha Iota, national professional music fraternity for women, and Phi Mu Alpha Sinfonia, a professional music fraternity for men, are dedicated to serve the cause of music in America. Student Music Educators National Conference is an affiliate of the Music Educators National Conference and is open to all interested students.

**Financial Aid:**

The University has made available to highly qualified undergraduate students a number of music service awards. Usually these awards cover in-state tuition fees, and are distributed following open auditions held in January and February. The award is made for the following year for three of the four quarters. Available to graduate students who show special potential for creative contribution to the profession are the University Scholar Awards and graduate assistantships and fellowships. Additionally, loans, grants and work programs are available to qualified University of South Florida students. Financial aid is granted on need, academic promise and character.

### THEATRE (TAR)

**The Departmental Major:**

Through its curriculum and production program, the Theatre department offers to seriously interested students the
opportunity to prepare themselves for the beginning of a professional career in the Theatre or to continue their studies at the graduate level. In addition, students from other departments and colleges have the opportunity to study and participate in the work of the department, thereby allowing them to gain insight into the creative experience of Theatre.

After a thorough orientation to all facets of the art gained in the basic courses, the Theatre major may begin to concentrate in the areas either of Performance or of Design and Technology. Throughout the student’s course of study, contact is encouraged by the faculty in the student’s chosen area of concentration to help the student realize his/her full potential and to help maintain awareness of progress.

To earn a major in theatre, the student following the Design and Technology track must take a minimum of 74 quarter hours; the student following a Performance track must take a minimum of 75 quarter hours. In addition to these, 18 or 19 hours of electives in the theatre department may be taken to broaden the general program or to pursue a particular interest in more depth.

For the student preparing to enter the theatre on a professional basis, a 96-hour emphasis in either Design-Technology and/or Performance is advised. Through the production program, which includes various performances for general audiences, children and department faculty and students, the student has the opportunity to participate in many different ways, thereby gaining practical experience that is essential to his/her development as an artist. For the more advanced acting student, opportunities sometimes arise for participation with other companies in the area. The Design/Technology area of the Florida Center (see description elsewhere in this section) offers to the advanced Tech and Design student opportunities to work with the professional companies (Dance, Theatre and Music) that come to the campus as a part of the University Artist Series and Dance Residency Program. For all students, a broad involvement in all facets of their field of concentration is encouraged.

**Visiting Artists and Artists in Residence:**

Despite the fact that the University is relatively young the Theatre department has had in residence artists from many kinds of theatre and many countries including: London’s West End, The Actor’s Studio, Dublin’s Abbey Theatre, Broadway, Washington’s Arena Stage, The American Shakespeare Festival, The Welsh National Theatre, the BBC, the London Academy of Music and Dramatic Art, Coventry’s Belgrade Theatre, Paris, Hollywood, East Berlin’s Deutsches Theater, Taiwan, the Socialist Republic of Armenia, and Poland. A partial, alphabetized list would include Martin Esslin, Miriam Goldina, Boris Goldovsky, Henry Hewes, Mesrop Kesdekan, Marcel Marceau, Paul Massie, Siobhan McKenna, Olga Petrovna, Ben Piazza, Alan Schneider, and Doug Watson.

**Requirements for the B.A. degree. Total 180 credit hours.**

**TAR MAJOR REQUIREMENTS:**

**All students must take:**

- TAR 201 (2)
- TAR 211 (3)

**Select two:**

- TAR 212, 213, 214, 215 (3 hours each)
- TAR 225 (1)
- TAR 339-403 (5)
- TAR 311 (4)
- TAR 430 (6)
- TAR 453 (3)
- TAR 321 (4)
- TAR 375 (3)

**TAR 400 level Theatre Studies (4)**

Total 41 hours

Students may choose either Performance Track or Design and Technology Track.

**Requirements for the Performance Track in addition to the 41 hour core:**

- TAR 410 (4)
- TAR 412 (4)
- TAR 414 (4)
- TAR 411 (4)
- Either TAR 438 (4) or TAR 439 (1-4)
- TAR 312 (3)
- TAR 314 (3)
- TAR 491-492 (8)

Total - 34 hours

Additional requirements for special 96-hour emphasis in Performance:

- 1 TAR 400 level Theatre Studies course 4 hours
- plus
- TAR 423
- plus
- 1 additional course in Tech Design Track

Total - 10 hours

Plus - 11 hours as stipulated at the discretion of the performance faculty

Total - 21 hours

**Requirements for the Design and Technology Track in addition to the 41 hour core:**

- TAR 423
- TAR 421
- TAR 461
- TAR 462
- Performance Course as specified by department
- Additional section of TAR 461 from related area

In area of emphasis—4 hours:

- Either TAR 427 (4) or TAR 425 (4) or 4 hours from TAR 424 (2), TAR 466 (2), TAR 474 (2).

In related area — 4 hours from TAR 427 (4) or TAR 425 (4) or four hours from TAR 424 (2), TAR 466 (2), TAR 474 (2).

Four credits from skills courses:

- TAR 417 (2)
- TAR 420 (2)
- TAR 419 (2)
- TAR 428 (2)
- TAR 474 (2)

Total - 33 hours

Additional requirements for special 96-hour emphasis in Design and Technology:

- 1 TAR 400 level Theatre Studies course

PLUS

Area of concentration in design, puppetry, performance for special audiences or other program that the Faculty determines appropriate for that student.

Total - 22 hours

**Special Requirements:**

Students majoring in Theatre may be expected to take courses inside or outside TAR Department as suggested by TAR Faculty or advisers as necessary for individual student’s progress. (See restriction on page 93... up to 10 hours.

**University and College of Fine Arts Requirements:**

**A) General Distribution requirements........................................... 60 hours**

**B) Free Electives (16 hours may be taken in TAR courses beyond major requirement for Bachelor of Arts Degree with 75 hours).......................... 23 hours**

**C) Special Requirements—courses in other departments in the College of Fine Arts........................................... 9 hours**

**D) Special Emphasis-additional courses beyond 75 hour requirement giving student preprofessional emphasis (96 hours total: See above for specific course requirement in performance and design and technology).......................... 21 hours**
Studies in the College of Fine Arts, or when the work itself is comprised of film, or could be reviewed simultaneously for both the removal of the deficiency or to provide time to demonstrate a particular competency. At the end of a provisional period, the student’s work will be reviewed by the art faculty, at which time the student will either (1) be allowed to continue in the program, with provisional status removed; or (2) be terminated from the program; or (3) be allowed an additional term of provisional status. Students accepted fully into the degree-seeking program initially will be given a calendar year in which to achieve “degree-candidacy” by faculty review. Neither the first term of a fully accepted degree-seeking student’s enrollment nor any summer term may be used for a candidacy review, however. A student admitted into the degree program provisionally will not be permitted a candidacy review during the first term of his/her provisional enrollment. Such a student could be given a candidacy review during the second term of enrollment if he/she had been removed from the provisional status at the end of the first term, or could be reviewed simultaneously for both the removal of the provisional status and for candidacy consideration during the second term provided that he/she is not required to enroll for a third term in the provisional status. Students initially admitted provisionally also have a calendar year in which to achieve candidacy. All degree-seeking students are provided with two opportunities within the calendar year to achieve candidacy. If a degree-seeking student does not achieve candidacy on the second attempt, the student will then be terminated from the program.

Upon acceptance to candidacy, the student will select a committee of three faculty members who will assist in his progress toward the degree (at least two of the committee members must be studio faculty of the student’s primary discipline). There is no foreign language requirement for the M.F.A. degree. In spite of the seven-year rule generally applicable to the Master’s Degree candidate (see page 47 in this Bulletin), the M.F.A. degree candidate is expected to be in planned continuous residence (enrollment for course work only in Summer Quarters not being required), regardless of the number of course credit hours carried in any given term, regardless of whether they be few, several, or many, and regardless of any per-term averaging pattern. If enrollment is not planned or made for any given term or terms during “continuous residence”, the degree-seeking student must request in writing and receive permission from the Director of Graduate Studies in the College of Fine Arts for such absence. Violation of the written terms of a permitted leave of absence could result in termination from the M.F.A. program, at the discretion of the Director of Graduate Studies in the College.
Absence from the program (failure to be actively enrolled for any term during “continuous residence”, excluding any summer term) without explicit written consent of the Director of Graduate Studies in the College of Fine Arts could result in immediate dismissal from the program (absence without leave). Any violation of the terms of a provisional or conditional acceptance into the program could result in the termination from the program. Any student not meeting the requirements of the program otherwise, explicit or implicit, and who is not terminated by the provisions indicated above, may be placed on “pending” by a written notification to the Records Section in the Office of the Registrar from the Director of Graduate Studies in the College of Fine Arts.

The M.F.A. degree requires a minimum of 72 quarter hours. With the exception of: (1) ART 682 (Graduate Seminar), which must be taken at least twice; and (2) ART 694 (Graduate Instruction Methods), which must be taken at least once, but which is limited to a cumulative total of 5 credits per student; and (3) the “Documentation” requirement, the course credits for which may be earned in either ART 681 (Directed Research), with only the appropriate number of credits commensurate to the work undertaken, submitted and approved acceptable toward the degree; or earned in ART 699 (Thesis, Masters), under the same conditions; and (4) the “Presentation of Work” requirement, the credits for which are allowed within reasonable limits, according to the committee-imposed requirements and the enormity of the other aspects of the task undertaken—all of which above are generally required, the specific course structure of any student’s graduate program will be determined by the Director of Graduate Studies in the College of Fine Arts after appraisal of the student’s interests, capacities and background during his/her first term of residency. Major areas of study include drawing, painting, sculpture, ceramics, lithography, intaglio, silkscreen, photography and cinematography. Under normal circumstances, students will not be encouraged to diversify too broadly; nor will they be encouraged in specializing too narrowly; but students who plan to prepare themselves for college or university-level teaching will be advised to develop competencies in more than one area in the interest of the sort of flexibility expected to be sought by hiring institutions for the next ten years or more.

The student must meet all of the stated prerequisites for any course into which he/she wishes to enroll. The responsibility for seeing that all graduation requirements are met rests with the student. Although the Director of Graduate Studies in the College will generally coordinate and supervise the student’s registrations and direction in the College in the early stages of the student’s program involvement, the student’s graduate committee will be directly responsible for the student upon the student’s achievement of candidacy in all curriculum matters, including the satisfactory completion of all requirements for graduation. The student must be registered as a full-time graduate student for at least two quarters of residency. The requirements for the M.A. Degree in Art Education are listed under the College of Education.

**M.F.A. Thesis Requirements**

The thesis required for the M.F.A. degree, while primarily a body of creative visual work (as opposed to the traditional written scholarly research document with standardized requirements), has other components and is developed in the following manner:

1. The production of the body of visual work for a Thesis Exhibition under the guidance of the student’s major professor (who will be the Chairman of the student’s graduate committee) and the two remaining faculty members on the student’s graduate committee.

2. The formally scheduled Thesis Exhibition itself. Although the reservation of desired available space and dates is arranged in advance between the student and the Exhibitions Coordinator, the body of thesis work to be presented must receive the final approval of the student’s entire graduate committee before there may be a Thesis Exhibition.

3. The Documentation of the Thesis Exhibition, which is not to be confused with “the thesis” as described in “Division of Graduate Studies”, under “Master’s Degree” as being required to conform to the guidelines in the Handbook of Graduate Theses and Dissertations. The required Documentation normally consists of two parts:
   a) A record in 35mm slides of each piece of work in the Thesis Exhibition when appropriate such, as in the case of paintings, sculptures, ceramics, etc. (obvious exceptions would be in the case of cinematography, etc.). Five sets of the documenting slides are normally required by the College for distribution and will be retained, the student bearing the expense.
   b) A logically developed, well organized, clearly articulated, written documentation of the development of the Thesis work. Although there is no rigidly prescribed style or format, the written documentation should be conceived and designed to reveal rather than to conceal, to communicate rather than to preclude communication, and must provide supporting evidence of an aesthetic awareness and of a creative sensibility.

1) Thesis Development: Before midterm of the quarter prior to the graduation quarter, student should submit in written form an outline of the ideas, concepts to be dealt with in the thesis document and exhibition to his Graduate Committee. The student’s Graduate Committee within a week will in turn:
   a) meet with the student to discuss their recommendations and reactions to the student’s proposal.
   b) these recommendations and reactions to be submitted to the student in writing.

It will be the student’s responsibility to act on these recommendations and to arrange meetings with the committee to review the development of the work and obtain their written approval for convening of the orals and presentation of the的作品 at least two weeks prior to the opening of the thesis exhibition.

Failing this written approval two weeks prior to the scheduled opening of the exhibition, the exhibition will be postponed.

2) Thesis Orals: Held in conjunction with the exhibition during the first week of the Thesis Exhibition. Three faculty questioners will be selected by the student with approval of his committee and the questioners will be given copies of the written documents two weeks prior to the exhibition orals. Student will meet with his Graduate Committee and three questioners in a closed session with the remainder of the faculty members.

A positive, constructive and careful examination of issues involved in the thesis/exhibition will take place. Those in attendance will be the candidate, committee, questioners and other members of the faculty, with the questioners and committee asking questions.

If any clarifications to the thesis document/exhibition are indicated, agreement should be reached at this time as to the necessary revisions.

The committee has the responsibility to seek the opinion of the faculty.

Any questioner or member of the committee can request consultation with the full faculty. The committee will consider the advice of the faculty when they make their decision.
3) Thesis Exhibition: If at all possible, the thesis exhibition will be held for a period of two weeks during the quarter of intended graduation, but in no case will any exhibition be held until the third week of the quarter.

4) Open Dialogue/Thesis Exhibition: During the final week of the Thesis Exhibition, a specific time will be established for an open dialogue to take place within the gallery. This dialogue will be open to the public and might include undergraduates, graduate students and faculty. There should be a free flow of questions, answers and discussion in direct reference to the development of the exhibited work and the student will be responsible for leading the activity. The formal aspects of evaluation of the thesis document/thesis exhibition will NOT take place at this time, but will have been resolved earlier within the Thesis Orals.

The signed original and four signed copies of the finally approved written Documentation, together with slides, must be submitted for permanent retention before the degree approval.

4. The oral defense of the Thesis Exhibition accompanying the oral defense of the written Documentation (as outlined above).

Master of Music Degree

The major concentrations available to graduate (M.M. seeking) music students are:

- performance
- theory
- composition
- choral conducting

Procedure for Applying

The applicant seeking acceptance into the Master of Music Degree program must meet the University's general admissions requirements and make formal application for general University acceptability with the Graduate Admissions Office. Concurrently, or even before, but certainly not appreciably later, the applicant must arrange to fulfill the specific acceptance requirements in the Music department (of the College of Fine Arts). Full acceptance can not be given until the applicant satisfies: (1) performance audition, (2) placement examinations in music theory-literature and piano. Dates and times for auditions and examinations may be obtained by telephoning or writing the Music department, College of Fine Arts. Persons to contact directly are the Chairman of the Music department and the Graduate Music adviser, or the Director of Graduate Studies (College of Fine Arts) for referral.

Requirements for the M.M. Degree:

General requirements for graduate work are given on page 47. In addition, the applicant for the Master of Music degree program will need to satisfy the following requirements in music before initial registration: (1) performance audition, and (2) placement examinations in music theory-literature.

The specific program for each student will vary according to his needs and interests. Each program must be approved by the student's adviser in conformance with the guidelines established by the Graduate Music Committee. A minimum of 54 quarter hours is required.

The responsibility for seeing that all graduation requirements are met rests with the student.
The major objectives of the College of Medicine are, first, to create and maintain an academic environment in which medical education, the production of new knowledge, and community service may be continued in a quality manner. The second objective is to integrate the College of Medicine into the mainstream of the community and to participate in and lead in the upgrading and improvement of the health care standards of the community in which the College is located. The third objective is to function within the framework of the total University as an integral and valued part of the University community.

The philosophy of the educational program at this institution is to provide a strong academic basis for lifetime scholarship in medicine and growth in professional stature for our students; to lay the foundation for the development of ever increasing technical and professional competency and proficiency in the arts and sciences of medicine for each of the students; to instill in our students compassion and a sense of devotion to duty to their profession and to their patients; to provide relevance and continuity in instruction among the various disciplines related to medicine; to maintain and increase our students' motivation for community and human service in the practice of their profession; to stimulate the students to accept major responsibilities in learning; to orient teaching activities around the student and his desire and ability to learn.

With these concepts in mind, a curriculum has been developed which we believe will achieve an effective correlation between the pre-clinical and clinical instructional areas. This curriculum is designed to emphasize conceptually oriented teaching, thus affording the students a challenging and intellectual experience as opposed to a routine and the superficial presentation of a large volume of facts. Relevance to medicine will be emphasized in all areas of instruction in a way recognizable and understandable by the student of medicine. Increased correlation on an interdisciplinary basis will be instituted providing reinforcement between the various fields of study. The curriculum will also provide a close and ongoing experience for the student in the day-to-day and continuing health care delivery system within the community hospitals and in ambulatory care facilities. It is anticipated the program will produce graduating physicians who understand and desire the practice of medicine as a fruitful and meaningful choice for a lifetime career of service to their patients and the community.

It is recognized that the program does place heavy demands upon the students. They will be expected to utilize all resources provided by the College, to maintain a consistent level of academic achievement, and to demonstrate evidence of initiative and dedication to their chosen profession.

**MEDICINE**

Students admitted to the College of Medicine, seeking an M.D. degree, are selected on the basis of what appears by present standards to be the best suited for the successful study and practice of medicine. The selection is made by the Admissions Committee composed of members of Pre-Clinical and Clinical faculty. Each applicant is considered individually and is judged strictly on his or her own merits. Characteristics evaluated include motivation, integrity, character, and general fitness. These are judged by recommendations of the applicant's Pre-Medical Advisory Committee as well as other letters of recommendation. The academic record and Medical College Admission Test furnish an estimate of academic achievement and intellectual competence.

Interviews are arranged for applicants whose qualifications appear to warrant complete exploration.

All inquiries concerning admission should be directed to the Associate Dean for Admissions, Medical Center, College of Medicine, Department of Admissions, Box 3, 12901 North 30th Street, University of South Florida, Tampa, Florida 33612.

**Requirements for Admission**

A minimum of three years of college or university work is required with some preference given to those applicants who present a bachelor's degree from a liberal arts college approved by one of the national accrediting agencies. The minimum requirement is three years of college work (90 semester hours or 135 quarter hours, exclusive of Physical Education and ROTC).

Regardless of the number of years involved in Pre-Medical training, the college credits submitted by the applicant must include the following:

- One Year—English
- One Year—General Chemistry, including laboratory
- One Year—Organic Chemistry, including laboratory
- One Year—Physics, including laboratory
- One Year—Biology, including laboratory
- One Year—Mathematics
- Applicants desiring admission to the July, 1978, freshman medical class will be required, as of July, 1978, to have one course in GENETICS and one in STATISTICS.

All applicants must arrange to take the Medical College Admission Test.

**Requirements for Graduation**

The awarding of the degree Doctor of Medicine will follow successful completion of the entire required course of study. Appropriate arrangements for post graduate training must be made. Grading of performance in academic subjects will be on a pass, fail, honors grading system, and the student must have achieved a grade of at least pass in all subjects in the curriculum.

**Doctor of Philosophy Degree in Medical Sciences**

A graduate program leading to the Doctor of Philosophy degree in Medical Sciences is offered by the Basic Science Departments of the College of Medicine. Information concerning this program may be obtained by contacting the Graduate Coordinator, Medical Center, College of Medicine, Box 10, 12901 North 30th Street, University of South Florida, Tampa, Florida 33612.
Students in the College of Natural Sciences are trained in the tools of logical analysis and the modes of experimentation in the continuing attempt to better understand the nature of man and his relationship to the universe. In all its functions the College is dedicated to fostering a spirit of inquiry and intellectual growth.

In its seven departments, the College of Natural Sciences offers programs in astronomy; biology, including botany, microbiology and zoology; chemistry, and biochemistry; geology; marine science; mathematics and physics. These programs are designed for students planning scientific careers in the science fields or for those planning professional careers having a considerable component of science. These students will typically major in one of the sciences or in a combination of sciences as preparation for employment, transfer to professional schools or admission to graduate school.

In addition to the majors in science, the college administers the pre-medical sciences advising program and the medical technology advising program. These programs combine specialized counseling and curriculum planning to assist the student in gaining admission to a professional school or internship program.

**BACCALAUREATE LEVEL DEGREE PROGRAMS**

**Admission to the College**

To be admitted to the College of Natural Sciences a student must make written application and satisfy the admission criteria of the college. Upon admission, the student will be assigned a faculty adviser for counseling and program planning. Students preparing for a science or mathematics career must plan their courses carefully because of the sequential nature of the science curriculum, and students seeking entrance into a professional school or medical technology internship program require specialized counseling. Because of this, immediate application for admission into the college is strongly recommended.

Information on admission criteria, departments, majors, programs, counseling, and other services of the college may be obtained from the office of the Dean or by contacting the Director of Advising, College of Natural Sciences, University of South Florida, Tampa, Florida, 33620.

**General Requirements for Degrees**

In addition to the university graduation requirements found on Page 33, the requirements for graduation in any undergraduate degree in the college are as follows:

1. Completion of a sequence of courses constituting a major program with a grade of "C" or higher in each course. A major program is defined to be courses in a department of concentration plus supporting courses in related departments. All courses in the major program must be taken with letter grade except those courses which are graded S/U only.

   A 2.0 grade point average must be achieved in courses in the department of concentration and a 2.0 grade point average must be achieved in the supporting courses of the major program. For a more detailed description of the major program requirements, consult the appropriate departmental section.

   Certain courses offered in the college are designed for the non-science major or the non-departmental major. The courses are designated "For non-majors," "No credit for (department) major," "No credit for science majors," or some similar phrase. For these courses the following rules apply:

   "For non-majors"—For majors in the college, the course will count as credit towards graduation only as a free elective.

   "No credit for (department) major"—the course will not count toward graduation for a science major in the specified department, but will count as credit towards graduation as a free elective for all non-specified departments.

   "No credit for science majors"—the course will not count towards graduation for any major in the college.

2. Satisfaction of the University distribution requirement, except:

   (a) In area III, the minimum requirement of eight hours in Mathematics may be waived by credit in at least eight hours of Mathematics courses required by the major.

   (b) In area IV, the minimum of eight hours in Natural Sciences may be waived by credit in at least eight hours of natural sciences courses required by the major.

3. Completion of 24 hours of courses from the College of Fine Arts, Social and Behavioral Sciences, or Arts and Letters. The student may elect any course from any of these colleges provided:

   (a) The courses are approved by the student's adviser.

   (b) No more than 12 hours are taken in courses in any one prefix.

   Courses taken to satisfy the University Distribution Requirement may not be used to satisfy this requirement.

4. At least 45 credit hours with letter grades must be earned in the College of Natural Sciences.

5. At least 45 of the last 90 hours of undergraduate credit must be in residence in courses (with letter grades) at the University of South Florida. The approval of the dean must be secured for any transfer credits offered for any part of these last 90 hours.

6. At least 45 credit hours must be earned in residence in the College of Natural Sciences.

   Credits transferred from other schools will not be included in the grade point average computed for graduation.

   For graduation with honors, see page 35.

   Natural Science students are permitted to repeat a course only once under the Forgiveness Policy.

   The college or department in the college may have specific requirements in addition to those listed in this bulletin. College rules or requirements are on file in the dean's office, and departmental rules or requirements are on file in each departmental office. The student is responsible for meeting all graduation requirements.
Grading Systems

Typically, courses in the University receive letter grades (A,B,C,D,F,I). However, the college recognizes that educational competence may be achieved and demonstrated by experiences other than classroom attendance leading to letter grades. The attention of the student is directed to the following:

1. CLEP and other advance placement examinations.
2. Waiver by either documentation or examination.
3. Off-Campus Term programs.
4. Cooperative Education Program.
5. Independent Study.

A. With the exception of courses graded S/U only, all courses required to satisfy the departmental major and all supporting courses required by the departmental major are considered in the students' major program and may not be taken S/U. However, once the requirements of the major program have been satisfied, subsequent courses taken in the major or supporting areas are considered free electives and may be taken S/U. All hours required to complete the 24-hour rule must be taken by letter grade.

B. With the exception of ENG 101, 102, 103 all courses in Distribution Requirements and all courses in free electives may be taken S/U. There is no restriction regarding the number of hours to be taken S/U except the graduation requirement that the student must earn at least 45 credit hours with letter grades in the College of Natural Sciences.

C. Students will be permitted to enroll in a course by an S/U on the basis of a written contract signed by the student, and the instructor of the course. This contract should be completed no later than the third week of the quarter in which the course is offered.

D. Each instructor for courses in the College of Natural Sciences will provide students with requirements necessary to attain an "S" grade. Essentially, "S" should be equal to a "C" or better.

E. Students transferring from any other college or division of the University will be subject to the above requirements.

Programs Leading to the Baccalaureate Degree

The College offers the Bachelor of Arts degree with majors in Astronomy (AST); Biology (BIO), Botany (BOT), Microbiology (MIC), and Zoology (ZOO); Chemistry (CHM); Geology (GLY); Mathematics (MTH); Physics (PHY); and Interdisciplinary Natural Sciences (INS) with a concentration in one of the above. The College offers the Bachelor of Science degree with majors in Chemistry (CHS), Clinical Chemistry (CHC), Medical Technology (MET), and Physics (PHS). For specific requirements, consult appropriate departmental sections of this bulletin.

■ PRE-MEDICAL SCIENCES

Modern health care ranges from diagnosis and treatment of disease to basic and applied research. Consequently, the health sciences need individuals with a diversity of educational backgrounds and a wide variety of talents and interests; and the student entering a career in the health sciences has an opportunity for service in a wide range of health care activities.

The pre-medical sciences program at the University of South Florida is administered by the College of Natural Sciences and is designed to assist students seeking entrance into a professional school in medicine, dentistry, veterinary medicine, or optometry. The program is designed to enhance the student's intellectual, personal, and social development. While specific requirements may vary, all professional schools recognize the need for a well-rounded education; therefore, the goal is to develop a perceptive, knowledgeable citizen with a strong foundation in the natural sciences yet broadened and enriched with a background in the social sciences and humanities. Each student in the program is assigned to a Pre-medical Adviser who will provide guidance relative to course selection, admission procedures, and entrance examinations, and who will write letters of evaluation to the professional schools. The student may remain in the program until admitted to a professional school or until he or she seeks other alternatives, even if the time required extends beyond the baccalaureate degree.

Pre-Medical Sciences Program

The pre-medical sciences program prepares the student for admission to a professional school. In addition, pre-medical science students seeking a degree may major in a discipline of personal preference, whether it be in the sciences or non-sciences, and fulfill all requirements in that major for graduation.

The following science courses are the requirements for admission to almost all accredited professional schools:

- One year of Biology: BIO 201, 202, 203.
- Two years of Chemistry: CHM 211, 212, 213, 217, 218, 219 (or CHM 215, 216), 331, 332, 333, 334, 335, 336.

In addition to the science requirements it is generally expected that the student will complete three quarters of English and three quarters of Mathematics, preferably including Calculus. CLEP credit is generally not acceptable to professional schools.

Some professional schools require or recommend additional courses. The following science courses are frequently specified:

- Biology: BIO 331, 401, 402, MIC 351, ZOO 311, 422.
- Mathematics: MTH 201, 202, 203.

Beyond science course requirements and recommendations, it is essential that students pursue courses developing a sense of understanding of cultural and humane values, and basic social problems. The quality of academic performance in preparation for professional school should be of the highest level. A few well-prepared students with exceptional qualifications may be admitted to some professional schools as early as the completion of the junior year of pre-medical work.

B.A. Degree for Medical and Dental Students

Students who are admitted to a medical or dental school after completing their junior year at The University of South Florida may be awarded the B.A. degree in Interdisciplinary Natural Sciences from the College of Natural Sciences subject to the following conditions:

1. Transfer of a minimum of 45 hours in science courses from an approved medical or dental school.
2. In attendance at the University of South Florida, the minimum requirements for the Interdisciplinary Natural Sciences major must be fulfilled as follows:

   A. 135 credit hours with at least a "C" average (2.000) in those credit hours completed at the University of South Florida.

   B. Completion of a sequence of courses constituting a major program with courses in a department of concentration and supporting courses in related departments. There must be a minimum of 36 credit hours in the discipline of major concentration and a minimum of 24 credit hours in supporting courses in the College of Natural Sciences outside the discipline of major concentration. The 36 credit hours in the discipline of major concentra-
tion must be in courses applicable to a major in that department. The 24 credit hours in supporting courses must also be taken in courses applicable to a major in that department and must include a minimum of three courses at the 300 level or above. The student must earn at least a "C" in each course in both major concentration and supporting courses, except for courses graded S/U only.

3. Credit in the following courses:
   - Biology: BIO 201, 202, 203
   - Chemistry: CHM 211, 212, 213, 217, 218, 219, (or CHM 215, 216), 331, 332, 333, 334, 335, 336

4. A minimum of 30 credits from the following courses:
   - Biology: BIO 331, 401, 402, ZOO 311, 422.
   - Mathematics: MTH 211, 212, 213 (or MTH 122, 123, 302, 303, 304).

5. The General Distribution requirements of the College of Natural Sciences as approved by the student's adviser.

6. At least 45 credit hours with letter grades earned in the College of Natural Sciences.

7. The last 45 credit hours prior to transfer to a medical or dental school in residence at the University of South Florida.

Application for the baccalaureate degree must be received no later than two years from the date of entrance into the professional school.

**GRADUATE LEVEL DEGREE PROGRAMS**

Programs of graduate study are available in every department of the College of Natural Sciences. Students apply for graduate work through the College of Natural Sciences and are recommended for admission by the department in which they intend to concentrate. A departmental committee is appointed which supervises and guides the program of the candidate. The general University requirements for graduate work at the master's level are given on page 47, and for the Ph.D. degree on page 48. The specific requirements for each department are listed under that department below. For further information regarding admission and the availability of fellowships and assistantships a candidate should write to the appropriate departmental chairman, University of South Florida, Tampa, Florida 33620.

**Master's Degree Programs**

The College of Natural Sciences offers graduate programs leading to the Master of Arts degree in the fields of Astronomy (AST), Botany (BOT), Mathematics (MTH), Microbiology (MIC), Physics (PHY), and Zoology (ZOO); and a Master of Science degree in Chemistry (CHM), Geology (GLY), and Marine Science (MSC).

**Doctor's Degree Programs**

The College of Natural Sciences offers three programs leading to the degree of Doctor of Philosophy:

- **Biology (BIO)**—This program leads to the Ph.D. in Biology, including the fields of Marine Biology, Systematics, Behavior, Ecology, and Physiology.
- **Chemistry (CHM)**—This program leads to the Ph.D. in Chemistry, including the fields of Analytical, Biochemistry, Inorganic, Organic and Physical Chemistry.
- **Mathematics (MTH)**—This program leads to the Ph.D. in Pure and Applied Mathematics.

**TEACHER EDUCATION PROGRAMS**

The College of Natural Sciences offers B.A. and M.A. degree programs for secondary school teachers and the M.A. degree for junior college teachers.

**B.A. Degree Program for Secondary School Teachers:**

The College of Natural Sciences in cooperation with the College of Education offers degree programs in Mathematics (MAE), in Botany (BOE), in Chemistry (CHE), in Physics (PHE), in Zoology (ZOE), and in Science (SCE). Because requirements exist in both colleges, a student will have an adviser in each college. At the outset the planned courses in mathematics and science must be approved by the student's adviser in the College of Natural Sciences.

There are two options available to the student to satisfy the science portion of the program:

1. The student may complete the requirements of the departmental major. Departmental majors in Botany and Zoology may be found in this section of the catalog under the heading Biology. The departmental requirements of Chemistry, Mathematics, and Physics are found in this section of this catalog under the respective headings in Chemistry, Mathematics, and Physics.
2. The student may complete requirements of the Interdisciplinary Natural Sciences major with concentration in Biology, Chemistry, Physics, and Mathematics. A complete description of this major is found on page 111. This major is particularly appropriate for Science Education majors (SCE).

Prospective students should consult the College of Education portions of this bulletin under the heading "Science Education (SCE)" for the required education courses and sample programs.

**M.A. Degree Program for Secondary School Teachers:**

The College of Natural Sciences in cooperation with the College of Education offers the M.A. degree in Mathematics (MAE) and in Science (SCE). In science, concentrations are available in Biology, Chemistry, and Physics. Because requirements exist in both colleges the student will have an adviser in each college. At the outset the planned courses in mathematics and science must be approved by the student's adviser in the College of Natural Sciences.

The University requirements for the M.A. degree are found on page 47. Mathematics majors must complete a minimum of 51 quarter hours; science majors must complete at least 27 quarter hours in the discipline of concentration. For requirements in education the student should consult the College of Education portion of this bulletin entitled "Master's Level Degree Programs—Science Education (SCE)."

**M.A. Degree Program for Junior College Teachers:**

The M.A. degree program for junior college teachers is available in the College of Natural Sciences with specializations in astronomy, biology, chemistry, geology, mathematics, or physics.
The student may complete the M.A. degree in a program offered jointly by the College of Natural Sciences and the College of Education. This program requires 36 hours in mathematics or science specialization courses which must be approved by the student's adviser in the College of Natural Sciences; 9 hours are required in Professional Education courses and 1-9 hours are required in internship depending on the amount of teaching experience of the student. For requirements in education, the student should consult the College of Education portion of the bulletin entitled "Junior College Teaching Program."

CURRICULA

I. ASTRONOMY (AST)

The Department of Astronomy offers programs leading to the degrees of Bachelor of Arts and Master of Arts in astronomy. Students who graduate with an undergraduate degree in astronomy are expected to have a good foundation not only in astronomy but also in mathematics and physics, with the emphasis varying with the individual. They are also trained to become competent computer programmers. Employment opportunities exist at various government agencies, in private industry, and as teachers in public and private schools. Students who receive an undergraduate degree in astronomy will not necessarily continue to become professional astronomers. Because of the breadth of their education, astronomy majors can take up a variety of post-college careers including graduate study in astronomy, mathematics, or physics.

The graduate program leading to a master's degree emphasizes specialization in various fields of astrophysics and astronomy. Most students continue to work for a master's degree after receiving the bachelor's. Employment opportunities at the master's level exist in the same way as they do on the bachelor's level. In addition the master's degree is regarded at some educational institutions as a terminal degree for teachers on the junior college or sometimes even college level.

The Astronomy Department has at this time 6 faculty members, all of whom are actively engaged in original research. The facilities include a 26-inch Schmidt-Cassegrain telescope with a focal length of 30', as well as several smaller telescopes and auxiliary equipment. Faculty and students have access to the IBM 360-65 computer.

Requirements for the B.A. Degree:

I. Astronomy Courses (34 cr. hrs. of upper level courses minimum).

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AST 301</td>
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<tr>
<td>AST 302</td>
<td>4</td>
</tr>
<tr>
<td>AST 303</td>
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<td>AST 311</td>
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<td>4</td>
</tr>
<tr>
<td>AST 583</td>
<td>1-6</td>
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</table>

II. Supporting Courses in the Natural Sciences (45-46 cr. hrs.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MTH 302</td>
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<tr>
<td>MTH 303</td>
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<td>MTH 305</td>
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<td>MTH 401</td>
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<td>PHY 206</td>
<td>2</td>
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<td>PHY 315</td>
<td>2</td>
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<tr>
<td>PHY 301</td>
<td>2</td>
</tr>
<tr>
<td>PHY 304</td>
<td>1</td>
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</tbody>
</table>

At least three of the following Physics courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PHY 307</td>
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</tr>
<tr>
<td>PHY 309</td>
<td>4</td>
</tr>
<tr>
<td>PHY 405</td>
<td>4</td>
</tr>
<tr>
<td>PHY 407</td>
<td>3</td>
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</tbody>
</table>

At least one of the following Mathematics courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTH 311</td>
<td>4</td>
</tr>
<tr>
<td>MTH 345</td>
<td>5</td>
</tr>
<tr>
<td>MTH 445</td>
<td>4</td>
</tr>
<tr>
<td>MTH 523</td>
<td>4</td>
</tr>
</tbody>
</table>

III. General Distribution Requirements (60 cr. hrs. excluding waivers)

The astronomy major must satisfy the General Distribution requirements of the College of Natural Sciences (See page 103).

IV. Liberal Education Electives

The student must satisfy 24 hours of liberal education electives as described in item 3 of the graduation requirements of the College of Natural Sciences (See page 103).

V. Free Electives (40 cr. hrs. maximum)

The student is expected to familiarize himself with the techniques of programming electronic computers before the end of his sixth quarter.

For students planning to attend graduate school, it is strongly recommended that they enroll in several courses numbered 500 or higher from group I above. They should also achieve a reasonable level of competence in at least one of three languages: French, German, or Russian.

Teacher Education Programs:

For information concerning the M.A. degree for junior college teachers, see above.

Requirements for the M.A. Degree:

General requirements for graduate work are given on page 47.

A minimum of 45 credits (excluding AST 694) must include at least 24 for courses numbered 600 or higher and at least 18 for structured astronomy courses numbered 500 or higher. It will be assumed that the student knows enough mathematics and physics to follow any astronomy courses required in his curriculum. No credit is available for courses numbered 499 or lower which the student takes in order to make up for his initial deficiencies in this respect. Since candidates for the graduate degrees in astronomy may have a variety of backgrounds, including majors in astronomy, mathematics, or physics, the required course of studies may vary considerably among students.

A thesis is required and must be based on original work. In lieu of the thesis, however, the student may be permitted to enroll for at least 8 additional hours on a level of 500 or above beyond the present requirements. It will be expected that the student will be assigned to a faculty member and perform research under this faculty member's direction. The student must also demonstrate, before the degree is granted, his ability to translate into English the pertinent scientific literature in at least one of the foreign languages: German, French or Russian. This last requirement may, in exceptional cases, be replaced by an equivalent one agreeable to the student and the department chairperson.

II. BIOLOGY (BIO/BOT/MIC/ZOO)

In addition to a set of basic courses in biology, students must have a thorough preparation in other areas of natural sciences in order to be competitive for jobs or for further study beyond the baccalaureate. A modern biology curriculum is built on a foundation of mathematics, chemistry and physics.

Four specific Bachelor of Arts degrees (Biology, Botany, Microbiology, and Zoology) are available for students interested in the biological sciences. They are all preparatory for careers in teaching, agriculture, medicine, dentistry, marine biology, biotechnology, or for post-graduate study in any of the various life sciences. The Department attempts to schedule sequences of
500 level courses which allow seniors in the Biology program to concentrate in such areas as: Ecology, Cell & Molecular Biology, Physiology, and Marine Biology. Students should study the requirements listed below and then make maximum use of the vigorous advising program maintained by the Department in structuring their total program. A reading knowledge of a modern foreign language (German, French, or Russian) is strongly recommended for those who intend to enter graduate school.

**Requirements for the B.A. Degree:**

I. Department of Biology Courses

A. **Biology Core Courses** (Required for all B.A. Degrees, 35 or 36 cr.)
   - BIO 201-203 (12)
   - BIO 331 (4)
   - BIO 401-402 (10)
   - BIO 445 (4)
   - Physiology (choice of course — for all programs as indicated: BOT 423, MIC 423 & MIC 402, ZOO 423)

B. **Individual Degree Requirements**
   - BIOLOGY MAJOR (BIO) (25 cr. hrs.)
     - 25 credit hours in BIO, BOT, MIC, and ZOO courses in consultation with adviser.
   - BOTANY MAJOR (BOT) (25 cr. hrs.)
     - BOT 300 (5) BOT 423 (0) BOT 491 (1)
     - BOT 311 (5) BOT 419 (5)
   - Biology Department Electives (9)
   - MICROBIOLOGY MAJOR (MIC) (25-27 cr. hrs.)
     - MIC 351 (4) MIC 451 or MIC 423
     - MIC 352 (2) BIO 558 (5/4) &
     - MIC 401 (3) MIC 457 (4) MIC 402 (0)
     - MIC 453 (4) MIC 491 (1)

   One of the following:
   - BOT 417/MIC 518/BOT 543/ZOO 513 (5)

   **NOTE:** Every microbiology major should obtain a recommended course sequence from a member of the microbiology faculty in order to avoid possible scheduling problems.

   - ZOOLOGY MAJOR (ZOO) (15 cr. hrs.)
     - ZOO 422 (5) ZOO 313 (5) ZOO 423 (0)

   Any one lab course in vertebrate biology (5)

II. **Supporting Courses in the Natural Sciences** (Required for all B.A. Degrees, 42 or 44 cr.)

   - CHM 211-213; CHM 217-219 (12) or
   - CHM 215-216 (10)
   - CHM 331-334 (10)
   - PHY 201-204 (10)
   - MTH (12)

   (Three courses in mathematics chosen from the following to attain 12 credits: MTH 211, 212, 213; 302, 303, 304, 305, 310, 311, 323, 345)

III. **General Distribution Requirements** (Required for all B.A. Degrees, 60 cr.)

   Each student is required to satisfy the General Distribution requirements of the College of Natural Sciences (see page 103). The selection of courses within the requirement is to be done in consultation with Biology Department advisers.

IV. **Liberal Education Electives**

   The student must satisfy 24 hours of liberal education electives as described in item 3 of the graduation requirements of the College of Natural Sciences (See page 103).

V. **Free Electives** (including General Distribution waivers) can be taken over and above major requirements and major electives to complete a 180 hour program.

**Teacher Education Programs:**

For information concerning the degree programs for secondary school teachers and junior colleges, see pages 71, 76, and 80 of this Bulletin.

**Marine Biology**

The field of marine biology is especially important in Florida and there is a good demand for trained personnel. Several faculty members in the Department teach courses and conduct research in this area. Undergraduates interested in specializing in marine biology may do so by taking marine-oriented courses offered within the Department. Appropriate courses include ZOO 313 (Introductory Invertebrate Zoology), ZOO 519 (Ichthyology), ZOO 520 (Echinoderm Biology), ZOO 545 (Zoogeography), ZOO 557 (Marine Animal Ecology), BOT 543 (Phycology), and BOT 547 (Marine Botany). The Biology Department offers M.A. degrees and the Ph.D. degree which allow specialization in marine biology.

**Requirements for the M.A. Degree:**

General requirements for graduate work are given on page 47.

Major programs are offered in Botany, Microbiology, or Zoology. The M.A. degree may be obtained by completion of a research thesis or by appropriate substitution of structured courses and an approved paper. The satisfactory completion of all general requirements and those specifically stated below are the responsibility of the individual student.

The selection of a committee must occur within the first three quarters after admission. Failure to do so will be cause for termination. The choosing of a major professor includes acceptance of the student by the faculty member. Until selection is accomplished, the departmental graduate coordinator will function as the student's adviser. The three-member supervisory committee, as approved by the departmental chairman and college dean, must include one faculty member from outside the student's area of specialization.

For students enrolled in the thesis program, a 45 credit hour minimum is required at the 500-600 level; 24 must be at the 600 level or above; 30 of the 45 credit hours must be in formally structured courses of which 22 must be in biology; 15 of the 22 credit hours must be at the 600 level or above. All students in the thesis program must complete the graduate seminar (BIO 691). A maximum of 15 hours of combined thesis, research, and seminar may apply toward degree.

For students enrolled in the non-thesis program, a 45 credit hour minimum is required at the 500-600 level; 40 credits must be in formally structured courses. 24 credits must be at the 600 level or above; 22 must be in biology.

A final comprehensive examination on basic biology is required for all students. This examination is open to all departmental faculty and is normally taken after the completion of formal course work and at least one quarter before thesis presentation.

In some cases, the ability to translate pertinent scientific literature from a foreign language must be demonstrated before taking the comprehensive examination.

**Requirements for the Ph.D. Degree:**

General requirements are given on page 48.

A doctorate program in biology is offered. Areas of specialization for the Ph.D. are marine biology, ecology (tropical ecology, population ecology, and physiological ecology), physiology (cellular physiology, microbial physiology, neurophysiology, systematics, and behavior). On admission to the Department for doctoral study, the student shall select a major professor from the departmental faculty for the direction of his program. A five-member supervisory committee will be named and approved by
the Department chairman and College Dean. At least one member of the committee shall be from beyond the student's area of specialization. This committee shall approve the courses of study, choice of language skills, and the supervision of the student's research and dissertation.

It is expected that students will have had undergraduate training comparable to that of a USF undergraduate in biology. A departmental requirement of a minimum of 30 credit hours are required in formally structured graduate-level courses from more than one faculty member, as well as any additional courses necessary to the needs of the student's program as determined by the supervisory committee. A maximum of 9 hours of formally structured graduate-level courses may be transferred from other graduate institutions. Fifteen hours from the master's degree program at USF may be applied toward meeting the above requirements with approval of the supervisory committee.

Some time before the end of the sixth quarter, a student must have demonstrated a reading proficiency in two foreign languages or approved special work. Language selection will be by the supervisory committee and testing by either the faculty of biology or foreign languages. After the language examination and before the end of the sixth quarter, the written portion of the preliminary examination must be completed. The oral portion of the preliminary examination must be completed within the next two academic quarters.

After completion of the above requirements, the student may be admitted to candidacy upon approval of the Dean of the College and the Director of Graduate Studies. One academic year of satisfactory service as a teaching assistant is recommended of all candidates. Also, public seminar presentation of the dissertation during the final quarter's work is required.

A final oral examination will be administered and evaluated by the supervisory committee. Emphasis will be upon the dissertation, the student's mastery of his general field of research, and the application of fundamental biological principles to the dissertation. The examination is conducted by a neutral and non-voting convener and the candidate shall be subject to questioning by any biology faculty member in attendance.

Graduate Application Deadlines:

Applications must be completed by March 10th for Quarter 1 applicants who wish to be considered for assistantships. All other applications must be completed by the fourth week of the quarter preceding the one for which you are applying.

CHEMISTRY (CHS/CHM/CHC)

The Department of Chemistry offers three degrees at the baccalaureate level, Bachelor of Arts degree in Chemistry, Bachelor of Science degree in Chemistry, and Bachelor of Science degree in Clinical Chemistry, and two degrees, Master of Science and Doctor of Philosophy, each with specialization in the areas of analytical chemistry, biochemistry, inorganic chemistry, organic chemistry, and physical chemistry, at the graduate level. The chemistry faculty is comprised of 27 full-time senior faculty members, all of whom hold the Ph.D. degree. A comparable number of teaching assistants, generally graduate students enrolled in the Ph.D. program, serve as instructors in the laboratories. The combination of a large and strong faculty with a wide variety of courses and electives provides students with programs of study which can be tailored to fit individual needs while maintaining a sound background in all general aspects of chemistry. The Bachelor of Science degree in Chemistry (CHM) is a rigorous program which supplies the foundation in chemistry required for both the student who begins a chemical vocation immediately upon graduation as well as the one who pursues advanced study in chemistry or related areas. In accord with this goal the curriculum for the B.S. degree meets the requirements for degree certification by the American Chemical Society.

The Bachelor of Arts degree (CHM) provides a course of study designed for the student who does not intend to become a professional chemist but whose career goals require a thorough understanding of chemistry. Inherent in this program is a high degree of flexibility which permits tailoring a course of study to the student's own educational objectives. As such it offers considerable advantages to pre-professional students planning careers in medicine and the other health-related fields and an excellent preparation for primary and secondary school teachers of chemistry or physical science. The B.A. student whose goals change in the direction of graduate work in chemistry should supplement this curriculum by addition and/or substitution of a selection of advanced courses from the B.S. program.

The Bachelor of Science degree in Clinical Chemistry (CHC) offered by the Department of Chemistry, one of only a few such programs in the country, is specifically designed to train personnel for this new and growing field of the medical profession; however, the strong scientific background and specific technical expertise provided by this program also afford the student an excellent preparation for graduate study in clinical chemistry, biochemistry, or medicine. Interested students should see the Coordinator of the Clinical Chemistry Program in the Department of Chemistry for further information.

In graduate work, the excellent physical facilities and very low student-teacher ratio combine to afford unique opportunities for advanced study in chemistry. In addition to the five traditional fields, analytical chemistry, biochemistry, inorganic, organic, and physical chemistry, research opportunities are also available in such interdisciplinary and specialized areas as bio-organic and bio-inorganic chemistry, clinical chemistry, environmental chemistry, lasers and photochemistry, marine chemistry, photoelectron spectroscopy (ESCA), and pharmaceutical chemistry.

Requirements for the Baccalaureate Degree:

I. Chemistry Courses*

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHM 211-213</td>
<td>Chemistry</td>
<td>15</td>
</tr>
<tr>
<td>and 217-219</td>
<td>(12)</td>
<td>CHM 341-343</td>
</tr>
<tr>
<td>or CHM 215-216</td>
<td>(10)</td>
<td>above; may include not</td>
</tr>
<tr>
<td>CHM 311</td>
<td>(5)</td>
<td>CHM 491</td>
</tr>
<tr>
<td>CHM 321</td>
<td>(5)</td>
<td>above (8)</td>
</tr>
</tbody>
</table>

B.S. CHEMISTRY (CHS) (54 credit hrs.)

CHM 211-213 | Chemistry | 15 |
| and 217-219 | (12) | CHM 351 |
| or CHM 215-216 | (10) | CHM 451 |
| CHM 291 | (1) | CHM 445-447 |
| CHM 321 | (5) | CHM 491 |

B.S. CLINICAL CHEMISTRY (CHC) (66 credit hrs.)

CHM 211-213 | Chemistry | 15 |
| and 217-219 | (12) | CHM 485 |
| or CHM 215-216 | (10) | CHM 421 |
| CHM 321 | (5) | CHM 425 |
| CHM 331-336 | (15) | CHM 426 |
| CHM 351, 354 | (7) | CHM 427 |
| *CHM 215-216 (10) can be substituted for CHM 211-213 and 217-219 (12). This reduces by two the credit hours of required chemistry courses in each degree program.

II. Supporting Courses in the Natural Sciences

B.A. CHEMISTRY (CHM) (35 credit hrs.)

MTH 212-213 | Mathematics | 15 |
| Electives (except 370-379, 470-479 series.) | (12) |

B.S. CLINICAL CHEMISTRY (CHC) (55-59 credit hrs.)

MTH 302-304 | Mathematics | 15 |
| PHY 301-306 | Physics | 20 |
| or CHM 201-206 | (10-15) | PHY 422 |
| BIO 201-203 | (12) | (4) |
| MIC 351 | (4) | (4) |

*CHM 341-343 (15)
B.S. CHEMISTRY (CHS) (32 cr. hrs.)
MTH 302-305 (17) PHY elective (300-400 level
PHY 301-306 (12) except 371) (3)

III. General Distribution Courses
(60 cr. hrs. excluding waivers)
The student is required to complete the General Distribution requirements of the College of Natural Sciences (see page 103).

IV. Liberal Education Electives
The student must satisfy 24 hours of liberal education electives as described in item 3 of the graduation requirements of the College of Natural Sciences (See page 103.)

V. Free Electives (Including General Distribution waivers)
B.A. CHEMISTRY (CHM); 31 cr. hrs.
B.S. CHEMISTRY (CHS); 23 cr. hrs.
B.S. CLINICAL CHEMISTRY (CHC); 6-10 hrs.
The required sequence of Chemistry courses should be started immediately in the freshman year and the mathematics and physics requirements should be completed before the junior year so that CHM 341 (B.A. degree) or CHM 441 (B.S. degree) can be commenced at that time.

† Students taking CHM 215-216 must add 2 more hours of free electives.

Teacher Education Programs:
For information concerning the degree programs for secondary school teachers and junior college teachers, see pages 71, 76, and 80 of this bulletin.

Requirements for the M.S. Degree:
General requirements for graduate work are given on page 47:
All entering graduate students who have no advanced work beyond a B.A. or B.S. will be required to take the core courses in each of the five areas: Analytical, Biochemistry, Inorganic, Organic, and Physical Chemistry. This requirement can be waived by recommendation of the supervisory committee on the basis of past work, performance on a diagnostic test, or substitution of more comprehensive and advanced courses. The required core courses are CHM 512, CHM 532, CHM 542, CHM 555 and CHM 621.
Beyond the required core courses, the curriculum for a chemistry major will vary with the area of the thesis. The specific course requirements will be determined by the supervisory committee and the proposed research, in consonance with the regulations of the University.
In order to gain the experience that comes from teaching, satisfactory service as a teaching assistant for two academic years is required (unless a specific exemption is recommended by the supervisory committee).

Comprehensive Examination
Each student must pass the written comprehensive examinations in three of the five areas: Analytical, Biochemistry, Inorganic, Organic, and Physical Chemistry. Each examination will be administered by the faculty of that area and will be from one to three hours duration. Each examination will be graded by the members of the respective areas, each arriving at a fail-pass-high pass verdict. A student may repeat any or all of the examinations provided that 3 have been passed by the time five quarters have elapsed since enrollment as a graduate student. The exams (each 1-3 hours) are offered four times each year, once between each quarter (except in the summer when the exams will be offered the first week of Quarter IV.) Again, it is to be noted that this requirement, as for the M.S. degree, must be completed before the beginning of the sixth quarter. The Qualifying Examinations shall be given in the form of one to three hour examinations in each of the five areas —analytical, biochemistry, inorganic, organic, and physical.

While it is anticipated that the core courses will bridge the gap between undergraduate and graduate courses, and will therefore help students prepare for the qualifying examinations, it should be understood that the qualifying examinations are general examinations in their respective fields and not merely final examinations in the core courses. Qualifying examinations should be attempted by students as soon as possible. These examinations are intended to test for broad and basic knowledge in each area at the Bachelor of Science level.

Language Examinations
Before a student is eligible to qualify for candidacy for the Ph.D. degree, a reading knowledge of the chemical literature in any two of the languages—German, Russian, and French (or any other language approved as appropriate by the supervisory committee)—must be demonstrated; or a reading knowledge in one of these languages and proficiency in a skill or specialization outside the discipline of chemistry must be demonstrated. The latter could include (1) proficiency in computer programming; (2) advanced specialization in mathematics, physics, biology, geology, or any other appropriate area pertinent to scholarly work in chemistry; (3) any other field of advanced study or proficiency deemed appropriate by the supervisory committee.

The language requirement must be met by one of the follow-
ing: (1) reading knowledge in two foreign languages as demonstrated by a test to be specified; (2) reading knowledge in one foreign language and some other proficiency such as computer programming; (3) in-depth knowledge of one foreign language (speaking and reading knowledge); (4) three quarters of a foreign language at the college level with a minimum of C grade in each quarter may be used to waive one language, or, if two foreign languages are taken, the language requirement is fulfilled; (5) periodic translations to be administered by the student’s supervisory committee.

The language requirement must be met one year before graduation.

Major Comprehensive Examination

A comprehensive major examination will be required of Ph.D. candidates sometime after satisfactory completion of the qualifying examination. This examination must be taken one year before graduation.

Advancement of Candidacy

Completion of all the foregoing requirements admits the student to candidacy for the Ph.D.

Final Thesis Defense

When the Supervisory Committee has inspected the final draft (final unbound form: typewritten and ready for duplication with the exception of possible minor corrections) of the dissertation and finds it suitable for presentation, the Major Professor will complete a form requesting the scheduling and announcing of the final oral examination. The request form will be submitted via the department chairperson to the College Dean and the Director of Graduate Studies for approval. The final oral examination must be held at least three weeks before the end of the quarter in which the student is to be awarded the degree. The required copies of the completed dissertation signed by the Committee must be received by the Director of Graduate Studies at least two weeks before the end of the quarter.

The Examination Committee shall consist of a chairperson and the members of the student’s Supervisory Committee including the Major Professor(s). The Chairperson of the Examination Committee shall be appointed by the Dean of the College and shall not be a member of the student’s Supervisory Committee or the department or program in which the degree is sought.

The candidate may expect questions concerning the details and significance of the research after the oral presentation which is open to the public. Final approval of the candidate’s degree will require approval by a majority of the Examining Committee, which shall include the Chairperson.

GEOLOGY (GLY)

Geology is one of the broadest of all sciences because of its dependence on fundamentals of biology, chemistry, mathematics, and physics as applied to the study of the earth. As a result, undergraduate students are expected to obtain a broad background in the other sciences as well as a concentration in geology. This bachelor’s degree program is designed to provide the geology major with a broad foundation that will prepare him for employment in industry or with various governmental agencies as well as the necessary training to continue study in graduate school.

The graduate program in geology allows the student to specialize in nearly all of the major areas of concentration. Because of the geographic and geologic location of the University in a rapidly expanding urban center of coastal Florida, there are a number of areas of specialization which are being emphasized. These include coastal geology, hydrogeology, low temperature and pollution geochemistry, geology of carbonate rocks and phosphate deposits. All of these are closely related to local problems of the environment.

In addition to the staff in the Department of Geology, there are a number of geologists on the faculty in the Department of Marine Science located in nearby St. Petersburg. Close ties are maintained between the two departments and students interested in marine aspects of geology are encouraged to take advantage of this situation for both course work and research.

Requirements for the B.A. Degree:

I. Geology Courses (51 cr. hrs.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GLY 210</td>
<td>4</td>
</tr>
<tr>
<td>GLY 361</td>
<td>4</td>
</tr>
<tr>
<td>GLY 412</td>
<td>4</td>
</tr>
<tr>
<td>GLY 211</td>
<td>4</td>
</tr>
<tr>
<td>GLY 405</td>
<td>4</td>
</tr>
<tr>
<td>GLY 410</td>
<td>4</td>
</tr>
<tr>
<td>GLY 302</td>
<td>5</td>
</tr>
<tr>
<td>GLY 411</td>
<td>4</td>
</tr>
</tbody>
</table>

A minimum of 2 cr. hrs. from:

GLY 492 (1)

II. Supporting Courses (33-40 cr. hrs.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHM 211-213</td>
<td>12</td>
</tr>
<tr>
<td>CHM 217-219</td>
<td>12</td>
</tr>
<tr>
<td>PHY 201-206</td>
<td>15</td>
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<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>CHM 215-216</td>
<td>10</td>
</tr>
<tr>
<td>PHY 301-306</td>
<td>12</td>
</tr>
<tr>
<td>MTH 211 and 212</td>
<td>8</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>MTH 123 and 302</td>
<td>8</td>
</tr>
</tbody>
</table>

Plus one additional course in mathematics statistics, or computer science as approved by the student’s adviser.

III. General Distribution Courses (60 cr. hrs. excluding waivers)

The student is required to satisfy the General Distribution requirements of the College of Natural Sciences. See page 103.

IV. Liberal Education Electives

The student must satisfy 24 hours of liberal education electives as described in item 3 of the graduation requirements of the College of Natural Sciences (see page 103).

V. Free Electives (Including Distribution waivers) (40-47 cr. hrs.)

A minimum of a C grade is required on all required courses and 2.0 grade point average is required for all courses taken in the major.

The student will choose, in consultation with his Geology adviser, such courses in the College of Natural Sciences that support his major interest within the field of Geology. A foreign language, preferably French, German, or Russian, is strongly recommended, especially for those students who anticipate continuing for a doctorate in graduate school. All geology majors are strongly urged to attend a summer field camp.

An entering student anticipating a major in Geology is advised to enroll in GLY 210, 211, 212 and CHM 211, 212, 213, 217, 218, 219, in the freshman year and to seek curriculum counseling with a Geology adviser.

Teacher Education Programs:

Prospective elementary and secondary school teachers desiring to teach science should include basic courses in Geology and related sciences as part of their curriculum.

For information concerning the M.A. degree program for junior college teachers, see page 80.

Requirements for the M.S. Degree:

Requirements for admission to the Division of Graduate Studies and general graduate curriculum guidelines are given on pages 43-47.

Students are admitted for graduate work in Geology if they present the requisite background in Geology and supporting sciences. The bachelor’s degree with a major in Geology or a major in other sciences with strong supporting program in geosciences is required. Students who wish to enter the graduate program in Geology without the proper background will be required to take some undergraduate courses without receiving credit toward their master’s program. In addition, a formal summer field course is strongly recommended.

The curriculum for a Geology graduate student will vary depending on the area of interest and thesis topic of the individual. A minimum of 45 credit hours (excluding GLY 694) is required.
for the master's degree of which a minimum of 24 credits must be in courses numbered 600 or above. All graduate students must take Graduate Seminar (GLY 691) at least three times and GLY 692 two times. Although a written thesis in the student's field of specialization is normally required, an equivalent amount of course work in Geology may be substituted if the program is approved in advance by the graduate committee of the Department. A comprehensive oral qualifying exam is to be taken by the end of the third quarter in the program. An oral thesis defense is also required.

**INTERDISCIPLINARY NATURAL SCIENCES (INS)**

The Bachelor of Arts in the Interdisciplinary Natural Sciences major is designed for majors in an interdisciplinary program in the college and for majors in Science Education and Mathematics Education. For information on teacher certification in science or mathematics, prospective teachers should consult the section entitled Teacher Education Programs on page 105, and also consult the College of Education section of this bulletin.

The requirements for graduation for this degree are the same as those contained on page 103 except that item 1 of the requirement is altered as follows:

1a. Completion of a major program consisting of a minimum of 68 hours in College of Natural Sciences courses. In these hours there must be a minimum of 36 credit hours in a discipline of major concentration and a minimum of 24 credit hours in supporting courses in the College of Natural Sciences outside the discipline of major concentration. All courses in the major program must be applicable to a major in that department and must have the approval of the student's adviser. At least three of the supporting courses must be at the 300 level or above. The student must earn 2.0 grade point average in all attempted course work of both major concentration and supporting courses and must complete at least 45 hours after acceptance into the major, all of which must have prior approval of his adviser.

**MARINE SCIENCE (MSC)**

Some of the most important research currently being carried out in the Gulf of Mexico is centered at the University's Department of Marine Science. There, biologists, chemists, physicists and geologists work together to bring greater understanding of not only the Gulf but all the seas of the world. The department offers courses leading to a master's degree in Marine Science. Degree candidates study and work with the researchers who have made the department's Bayboro St. Petersburg headquarter's a major ocean research center. The research interests of the department are widespread and include interdisciplinary studies of estuarine environments, shelf and deep water investigations, hydrodynamic modelling, nutrient cycles, benthic ecology, mariculture, and marine policy. The department has excellent research and classroom facilities on the downtown St. Petersburg waterfront, including a fleet of small vessels ranging from 16 to 36 feet in length. Deep water studies are conducted using the State-chartered Bellows, or oceanographic vessels of opportunity.

Marine scientists traditionally specialize in one of four basic research areas: marine biology, marine chemistry, marine geology, or physical oceanography. Thus, while the degree program in Marine Science is at the master's level, students may prepare for graduate work by obtaining a baccalaureate degree in one of these four areas. By a suitable choice of marine oriented elective courses, a major in Biology, Chemistry, Geology, or Physics can be an excellent vehicle for entry into a graduate program. Potential marine sciences majors should consult with an undergraduate adviser concerning these baccalaureate majors.

The field of Marine Science is destined to grow in all its subdivisions and offers opportunities for individuals as our use of the sea expands.

**Requirements for the M.S. Degree:**

General requirements are given on pages 47-48. A minimum of 45 credits must include MSC 521, 531, 541, and 551 unless the student, as determined by the graduate committee, has had the equivalent of one or more of these courses.

The student may emphasize biological, geological, chemical, or physical oceanography, or marine policy through his thesis research and course work. A thesis is required but a foreign language is not.

Courses taken in addition to those required are determined by the area of specialty in consultation with the student's graduate committee. Normally, a student entering this program spends one or two quarters in residence at the Tampa campus taking courses in those departments most closely related to his specialization. Following course work at the Tampa campus, the student will usually move to St. Petersburg to complete his course work and thesis research. Admissions materials for students entering Quarter I should reach the department by March 15. For students entering Quarters II, III, or IV materials should be in by October 15 for admission sessions in late March and October respectively. Additional rules are available in the Marine Science Department Handbook which is available in the Department Office.

**MATHEMATICS (MTH)**

The Department of Mathematics offers a diversity of courses designed not only to enable the student to pursue a profession in mathematics itself, but also to enhance his competence in the fields of engineering, the physical sciences, the life sciences, and the social sciences. The Department offers programs leading to the B.A., M.A., and Ph.D. degrees. The undergraduate program emphasizes the broad nature of modern mathematics and its close association with the real world. The program is designed to prepare students for entry into graduate school or careers in industry or secondary education.

The Department has a flexible Ph.D. program which is designed to encourage students to take an active role in the shaping of their own curricula. This flexibility is coupled with a desire to promote interdisciplinary research. In cooperation with the Departments of Astronomy, Marine Science, and Physics, and the Colleges of Engineering and Medicine, the Department offers special Ph.D. programs in the applications of mathematics.

The Department is composed of four areas of concentration. These areas are as follows:

1. **Algebra and Topology**
   - Number theory, algebraic coding theory, general topology, topological semigroups.
2. **Analysis**
   - Real analysis, complex analysis, abstract harmonic analysis, abstract measure theory, approximations and expansions, functional analysis, geometric function theory.
3. **Applied Mathematics and Computer Science**
   - Asymptotic methods, differential equations, integral equations, numerical analysis.
4. **Statistics and Stochastic Systems**
   - Biomathematics, theory of probability and statistics, reliability theory, stochastic modeling in the life sciences and engineering, stochastic systems and time series.

There are 30 faculty members in the Department and about 50 graduate students. The graduate program is young and still in the developmental stage. While programs in the more traditional areas of pure mathematics are offered, the Department is committed to emphasizing applied mathematics at both the graduate and undergraduate levels. For both undergraduate and graduate work students and faculty have access to the university's computer, an IBM 360/365.
Requirements for the B.A. Degree:

The courses taken to satisfy the Group I and Group II requirements below will constitute the major program referred to in the general graduation requirement of the College of Natural Sciences.

I. Mathematics Requirements (47 cr. hrs.)

Majors must complete at least 47 credits in mathematics courses above the 100 level, including MTH 302 (5), 303 (4), 304 (4), 305 (4), 309 (3), and 323 (4). In addition, except for majors in mathematics for teaching, the following sequence is required: MTH 405 (3), 406 (3), and 407 (3). Majors in mathematics for teaching must have MTH 423 (3), and 424 (3).

Suggested upper level courses for a major in mathematics are:

MTH 401 (4)  MTH 511 (4)  MTH 531 (4)
MTH 445 (3)  MTH 520 (4)  MTH 547 (3)
MTH 447 (4)  MTH 523 (4)

Variation in course selection for special needs is to be done in consultation with the appointed adviser.

II. Mathematics Related Courses (21-26 cr. hrs.)

Majors, except for majors in mathematics for teaching, must take two of the following sequences, one of which must be in the College of Natural Sciences:

1. AST 301, 302, 303.
2. BIO 201, 202, 203.
3. CHM 211, 212, 213, 217, 218, 219, or CHM 215-216.
4. GLY 210, 211, 212.
5. ECN 201, 202 and one of ECN 301 or 323.
6. EGB 311, 312, 313.
7. EGB 321, 322, and one of EGR 311 or 315.
8. EGB 340, 341, 344.
10. PSY 200, 300, 310, 312.

Majors will not receive credit toward graduation for the following courses: AST 371, PHY 371, ECN 231, ECN 331, ECN 431, SSI 301. Majors wishing to take a course which requires a knowledge of statistics should take MTH 371.

III. General Distribution Courses (60 cr. hrs. excluding waivers)

Majors must satisfy the General Distribution requirements of the College of Natural Sciences, which must include (or show competence in) one of the following sequences:

FRE 101, 102, 103
GER 101, 102, 103
RUS 101, 102, 103

IV. Liberal Education Electives

The student must satisfy 24 hours of liberal education electives as described in item 3 of the graduation requirements of the College of Natural Sciences (see page 103).

The following is a suggested course program for the first two academic years:

<table>
<thead>
<tr>
<th>Fall Quarter (I)</th>
<th>Winter Quarter (II)</th>
<th>Spring Quarter (III)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTH 122, 123</td>
<td>MTH 302</td>
<td>MTH 303, 309</td>
</tr>
<tr>
<td>MTH 304, 323</td>
<td>MTH 305</td>
<td>Two MTH electives</td>
</tr>
</tbody>
</table>

Students with a strong background in high school mathematics may omit either or both MTH 122, 123 with the consent of the chairman.

Teacher Education Programs:

For information concerning the degree programs for secondary school teachers and junior college teachers, see pages 71, 76, and 80 of this Bulletin.

Requirements for the M.A. Degree:

General requirements for graduate work are given on pages 103.

A thesis is optional. The thesis program requires a minimum of 45 credits of course work (excluding MTH 694), of which the thesis may carry three to nine credits. The non-thesis program requires 45 credits of course work. In either case, 24 hours of the course work must be taken in courses numbered 600 or above and the program must total at least 45 credits.

The course of study is flexible and interdisciplinary work is encouraged.

The areas of specialization include the following:

a. Algebra and Topology
b. Analysis
c. Applied Mathematics and Computer Science
d. Statistics and Stochastic Systems

Each candidate for the M.A. degree is required to pass a written examination in three of the following subjects:

a. Algebra (MTH 511, 523, 524)
b. Applied Statistical Methods (MTH 525, 526)
c. Complex Analysis (MTH 520, 521 or MTH 521, 540)
d. Differential Equations (MTH 501, 502, or MTH 541, 542)
e. Probability Theory (MTH 545, 546)
f. Real Analysis (MTH 513, 514)
g. Topology (MTH 531, 532)

Each examination will cover the prescribed contents of the courses listed above.

A reading knowledge of either French, German or Russian as required. Computer Science may be substituted for the language requirement.

For specific program requirements, the student should consult the Department Chairperson.

Requirements for the Ph.D. Degree:

In addition to the general University requirements for the Ph.D. degree, on page 48, the Mathematics department requires the following:

1. Qualifying Examinations

Each doctoral student must pass at the Ph.D. level a written examination in four of the subjects listed under the Requirements for the M.A. degree.

2. Foreign Language Requirement

Each student must pass an examination in two of the three languages: French, German or Russian. Computer Science may be substituted for one of the languages.

3. Course Requirements

The student's program of study must meet the course requirements for the M.A. degree. Other course requirements will be determined by the student's Supervisory Committee.

4. Specialization Examination

This examination shall be administered by the student's Supervisory Committee after he has passed the qualifying examinations, the language requirements, and has completed all course requirements. The composition and scheduling of this examination shall be determined by the Supervisory Committee and may be written and/or oral.

5. For specific program requirements, the student should consult the chairperson of the Department of Mathematics.

6. The student must submit a dissertation to be approved by the Supervisory Committee.

MEDICAL TECHNOLOGY (MET)

Medical Technology is one of the growing professions associated with the advances in modern medical science. Working in the clinical laboratory, the medical technologist performs chemical, microscopic, bacteriologic, and other scientific tests to help track the cause and treatment of disease. This talent re-
quires specialized training and a baccalaureate degree is essential preparation for certification as a medical technologist.

The University of South Florida offers a four-year program leading to the Bachelor of Science degree in Medical Technology. A student electing to major in Medical Technology will spend the first three years of the program on the campus of the University of South Florida; the fourth year (12 months) will be spent in one of the affiliated hospitals or clinical laboratories. Admission to the fourth year is limited by the number of openings in the affiliated hospitals. Selection of interns is made by the hospitals.

During the first three years, the medical technology student will complete the liberal arts and basic science requirements for entrance into the fourth year of the program for clinical training. To remain in good standing as a Medical Technology major during this period, a reasonable grade point average, determined by the College of Natural Sciences, must be maintained. To be eligible for entrance into the program's fourth year, the student must have completed not less than 135 credit hours of work (excluding physical education courses). Of these hours, at least 30 credit hours must be from the College of Natural Science at the University of South Florida (in courses approved by the Director of the Medical Technology Program). The following courses must be included in the three years of work which precedes the fourth year of clinical training:

1. **Biological Sciences**
   A minimum of 24 hours is required with at least one course in microbiology. Physiology (ZOO 371 or 423) is strongly recommended.

2. **Chemistry**
   A minimum of 24 hours is required including organic chemistry. Biochemistry (CHM 351) and Elementary Analytical Chemistry (CHM 321) are strongly recommended.

3. **Physics**
   A minimum of 12 hours (one full-year majors-type course) is required.

4. **Mathematics**
   One course in mathematics (above the level of MTH 110) is required. A year of math or its equivalent is strongly recommended.

5. **General Distribution Requirements**
   Courses satisfying the general distribution requirements of the College of Natural Sciences.

6. **Courses in non-science fields to insure a broad background**
   Upon successful completion of this curriculum, recommendations by the College, and acceptance by one of the affiliated hospitals or clinical laboratories the student will complete 12 continuous months of training at that hospital or laboratory.

   This training period usually begins in early August or September of each year. During this period, one will continue to be registered as a full-time student of the University and will receive a total of 45 credit hours of work in MET 311, 431, 432, 442, 451, 453, 454, and 485. These courses will be taught at the hospital or clinical laboratory. Students successfully completing this program will be granted a Bachelor of Science degree in Medical Technology.

- **PHYSICS (PHY/PHS)**

   The Department of Physics offers programs leading to a Bachelor of Arts or a Bachelor of Science degree, and to a Master of Arts degree. Both thesis and non-thesis programs are available for the M.A. degree.

   Undergraduate course offerings of the Department provide a well-balanced program covering virtually every area of physics. Special courses may be offered upon sufficient demand. Modern, excellently equipped classrooms and laboratories provide an outstanding environment for students. Opportunities for undergraduate students to participate in research projects with professors and graduate students form an integral part of the undergraduate experience. Undergraduate students have engaged in research efforts to the extent that their work has been published in scientific journals. There is a tradition of close working relationships between professors and students.

   At the graduate level, thesis research areas include theoretical and experimental plasma physics, theoretical and experimental solid state physics, experimental gaseous electronics, elementary particle theory, and biophysics. Supporting facilities include an IBM 360/75 computer, an excellently equipped machine shop and electronic shop, a glass blowing shop, an electron microscope, and an x-ray photoelectron spectrometer. Teaching assistantships and financial aid through the College Work-Study Program are often available to qualified students. A supervised study hall is available where students may obtain help with their course work at their convenience throughout each week day.

### Requirements for the Baccalaureate Degree:

I. **Physics Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHY 201-206</td>
<td>315 (18)</td>
<td></td>
</tr>
<tr>
<td>PHY 409</td>
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<td></td>
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<tr>
<td>PHY 301-306</td>
<td>317 (12)</td>
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<tr>
<td>PHY 341</td>
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<td>PHY 307</td>
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<td>PHY 441</td>
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<td>PHY 407</td>
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<td>PHY 417**</td>
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<tr>
<td>PHY 471**</td>
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<tr>
<td>PHY 491</td>
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</table>

II. **B.S. PHYSICS (PHS) 55-62 cr. hrs.**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>PHY 201-206</td>
<td>315 (18)</td>
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<td>PHY 423</td>
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<td>PHY 409</td>
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<td>PHY 405</td>
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<td>PHY 437</td>
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<tr>
<td>PHY 421 or</td>
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<td>PHY 517 or</td>
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<td>PHY 523</td>
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<td>PHY 415</td>
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<tr>
<td>PHY 501</td>
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<tr>
<td>PHY 541</td>
<td>317 (3)</td>
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<tr>
<td>PHY 491</td>
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</table>

III. **General Distribution Requirements**

   The student is required to complete the General Distribution requirements of the College of Natural Sciences (see page 103). Selection of a foreign language, preferably French, German, or Russian, is also strongly recommended.

IV. **Liberal Education Electives**

   The student must satisfy 24 hours of liberal education electives as described in item 3 of the graduation requirements of the College of Natural Sciences (See page 103).

V. **Free Electives (Including General Distribution waivers)**

   - **B.A. PHYSICS (PHY): 48-57 cr. hrs.**
   - **B.S. PHYSICS (PHS): 37-49 cr. hrs.**

### Teacher Education Programs:

For information concerning the degree programs for secondary school teachers and junior college teachers, see pages 71, 76, and 80 of this Bulletin.

*Credit will not be given for both general physics sequences PHY 201-206 and PHY 301-306.*

**With the consent of the Physics Adviser, either or both of the following substitutions may be made: PHY 437 for PHY 417 and PHY 331 for PHY 419.*
Requirements for the M.A. Degree:

General requirements are given on page 103. When a student is admitted to the graduate program in physics, he will consult with the Graduate Physics Adviser, who will be his course adviser and will also keep a close check on the progress of the student in his work. After a decision has been made concerning the student's academic goals, the duties of the Graduate Adviser will be assumed by a Supervisory Committee appointed by the department chairman. The Supervisory Committee will have the right and the responsibility to add special requirements to meet any deficiency in the student's background.

The student desiring the M.A. degree with a thesis is required to take a minimum of 45 credits no more than nine of which may be for PHY 681, 691, and 699. Of these 45 credits, 24 must be in courses numbered 600 or above. Required courses are PHY 523, 537, 541, 607, 631, 632, and 641. The Supervisory Committee will administer a comprehensive examination before recommending that a degree be granted.

The student desiring the M.A. degree without a thesis is required to take a minimum of 45 credits (excluding PHY 694), no more than three of which may be for PHY 681 and 691. Of these 45 credits, 24 must be in courses numbered 600 or above.

Required courses are PHY 541, 542, 543, 605, 608, 632, 637, and 641, and a choice of any two of the following: PHY 517, 521, 523, or Biophysics. The Supervisory Committee will administer a written and an oral comprehensive examination before recommending that a degree be granted.

All graduate students are required to register for PHY 691 in the first quarter of each academic year and, in connection therewith, to attend all Physics Colloquia scheduled during the year.
New College, a former private liberal arts college, became a part of the University of South Florida in 1975, retaining its distinctive academic program and the status of an honors college within the greater University.

New College attempts to provide an educational environment that will allow students to obtain maximum academic and personal development. The curriculum is designed to promote their self-direction and to supply them with the knowledge and skills necessary for their careers. New College is both traditional and contemporary in its orientation: dedicated to humane learning, but also purposely seeking the discovery, the development, and the creation of ways to equip man for survival in a fluid society.

During its 12-year history, New College fostered a constantly evolving program with faculty and students ever alert for better ways to nourish individual growth. Students are encouraged to develop their own educational plans—using the educational contract—that will help them reach individual goals. Flexibility, individualism, and broad freedom of choice characterize the program, giving to each student the opportunity to play a major role in the constructing of his or her own program.

The Academic Calendar and Residence Requirements

New College operates on a slightly different academic year than the rest of the University. The College's academic year is divided into three 10-week terms beginning in September and ending in June with a special four-week period intervening in late fall designed specifically to permit students to accomplish independent studies.

Since students at New College are selected for their ability to benefit from the special New College program, they are considered, at entrance, to have the ability to begin at an advanced state of preparation. Therefore, New College offers each student the opportunity to earn a bachelor's degree in three academic years, or nine terms, of residence. However, each student also has the option to distribute his educational experience over a four-year period by taking several terms off from study at selected times during those four years.

Educational Contracts

The basic instrument of the New College educational program is the educational contract, a written document constructed at the beginning of a term by each student and expressing that student's plans for the ensuing term.

Each contract is developed by the individual student as an expression of personal education and career goals, but faculty are expected to contribute substantially to help students determine the best ways to shape contracts to reach goals.

Admissions Requirements

New College welcomes applications from all qualified students without regard to nationality, creed, race, or sex. New College seeks those students who are unusually well-qualified to thrive in its intellectual and social atmosphere. The College uses a variety of indicators to help each student measure whether he or she is right for participating in this special program. The most reliable index of this ability remains past scholastic performance.

Student Scholastic Aptitude Tests (SAT) combined scores range from 1100 to 1600 with the average falling near 1200. The experience of students over the past 12 years has demonstrated that those whose combined scores fall anywhere within that 1100 to 1600 range are capable of succeeding at New College. They also have the personal characteristics that will allow them to cope effectively with the educational program. These individual traits, in addition to motivation, are initiative, tenacity, maturity, curiosity, concern for others and an excitement about life and learning as essential attributes. Applicants may submit results of the Scholastic Aptitude Test from the College Entrance Examination Board or scores received from the American College Testing Program (ACT) to help the Admissions Office of New College determine whether a student should be selected for any class.

Since the program at New College has been deliberately designed to fulfill the needs of individual students, it follows that the College will also accept students with varied academic preparation. The College does not require that certain courses be completed to gain admittance, but does urge prospective students to complete the customary courses within a college preparatory program before enrolling at New College. Particular attention is given to students who have participated in honors courses, advanced placement, or enriched and accelerated courses and independent studies.

Advanced placement provided at some institutions is not necessary for admission to New College of USF simply because admissions procedures are designed to assure that all students will be able to function at an advanced level. The fulfillment of this expectation is facilitated by the mutual effort of each student and his academic adviser to design a program that takes the abilities of the individual student and his previous preparation into consideration. Students are encouraged to begin studies at advanced levels, if they have adequate background.

Application forms and literature may be obtained from the Director of Admissions, New College of USF, 5700 N. Tamiami Trail, Sarasota, Florida 33580. Prospective students should note that a supplemental application is needed for admission to New College.

Application Deadlines:

Fall Term/Term I: Application should be completed before March 1 and no later than April 1. Application for financial assistance should be received before February 1.

Winter Term/Term II: Application should be completed by November 1.

Spring Term/Term III: Application should be completed by February 1.

115
Degree Requirements

All students who are graduated from New College of USF receive a Bachelor of Arts degree. However, students may elect to concentrate in any of a number of areas within the various divisions or to elect an interdisciplinary course of study in fields of their own shaping. Requirements for completion of a course of study at New College include satisfactory evaluations on nine educational contracts, on four independent study projects, on the senior project, and on the baccalaureate examination.

Areas of Study

New College is divided into three academic divisions—Humanities, Social Sciences, and Natural Sciences—and students may elect to study primarily in one area, to distribute their studies throughout the entire three divisions, or to create special interdisciplinary curricula which span offerings in any of the disciplines.

To aid prospective students of New College, each division has indicated broad areas of study which are available in each division. Within each area there are, of course, many subdivisions and information about these may be obtained from the New College Records Office.

Special Programs

New College has two special programs which are available to students of New College but which fall outside of the regular divisional or interdisciplinary areas.

Costs

Costs for attending New College of USF are the same as those for attending any part of the State University System. Costs are based on a per-credit hour basis (see page 17 for University credit-hour costs). Each term's educational contract is the equivalent of 16 credit hours while each independent study project is equivalent to four credit hours.

Since New College offers students the opportunity to have a more individualized type of study than is available in other University programs, it is easily seen that such a program would be more expensive. To help meet this difference in cost, the New College Foundation has agreed to provide an annual subsidy to the university system to make up the difference of state funding and the actual cost of the educational program. These funds are raised by the New College Foundation and its Board of Trustees from individuals, corporations and foundations.

Student Life

New College is essentially a residential institution with the majority of the students living either on campus or in the surrounding community. Students are challenged to accept major responsibilities for the direction of their own affairs, including their social and extra-curricular activities. A Student Affairs Office is an essential part of New College and is concerned with almost all phases of student life from orientation of arriving students to commencement plans for those ready to depart. Student Affairs, through its professional staff, is responsible for counseling, housing, recreation and health services. Staff also are concerned with helping students assume responsibilities in relation to others on campus and in the outside communities.

All first-year students live on campus during their initial academic year. Upper-class students may choose College or non-College residency and all students have the option of taking advantage of using the college food service or of making independent arrangements for meals.

New College offers counseling for students in several different areas. New College provides for students a small health center on campus, staffed while the college is in session. Excellent specialized medical services are readily available in the community with a community hospital only minutes away from campus. Qualified clinical psychologists provide for students a broad range of psychological counseling and therapy as well as dealing with students concerned about life goals, academic and career decisions, and study skills. Professional medical and psychiatric counsel is available in the community at the student's expense.
1977-78 ACADEMIC CALENDAR
NEW COLLEGE OF USF

Fall Term (I), 1977
and Independent Study Period

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>September 5, Monday</td>
<td>Labor Day Holiday</td>
</tr>
<tr>
<td>September 7-10, Wed.-Sat.</td>
<td>Orientation and Advising</td>
</tr>
<tr>
<td>September 12, Monday</td>
<td>Classes Begin</td>
</tr>
<tr>
<td>September 16, Friday</td>
<td>Fees Due; Last day to withdraw without financial penalty</td>
</tr>
<tr>
<td>September 21, Wednesday</td>
<td>Contracts Due</td>
</tr>
<tr>
<td>September 23, Friday (noon)</td>
<td>Last day for contract submission for Term I'</td>
</tr>
<tr>
<td>November 1, Tuesday</td>
<td>Deadline for declaring option/off-campus study for Term II'</td>
</tr>
<tr>
<td>November 4, Friday</td>
<td>ISP Sign-up forms due</td>
</tr>
<tr>
<td>November 15-17, Tues.-Thurs.</td>
<td>Early registration for Term II</td>
</tr>
<tr>
<td>November 18, Friday</td>
<td>End of Fall Term</td>
</tr>
<tr>
<td>November 21, Monday</td>
<td>Independent Study Period Begins</td>
</tr>
<tr>
<td>November 24-25, Thurs.-Fri.</td>
<td>Thanksgiving Day Holiday</td>
</tr>
<tr>
<td>December 16, Friday</td>
<td>Independent Study Period Ends, Projects Due</td>
</tr>
</tbody>
</table>

Winter Term (II), 1978

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 3, Tues.</td>
<td>Registration, Orientation, and Advising</td>
</tr>
<tr>
<td>January 4, Wednesday</td>
<td>Classes Begin</td>
</tr>
<tr>
<td>January 6, Friday</td>
<td>Fees Due; Last day to withdraw without financial penalty</td>
</tr>
<tr>
<td>January 11, Wednesday</td>
<td>Contracts Due</td>
</tr>
<tr>
<td>January 13, Friday (noon)</td>
<td>Last day for contract submission for Term II'</td>
</tr>
<tr>
<td>February 7-9, Tues.-Thurs.</td>
<td>Early Registration for Term III</td>
</tr>
<tr>
<td>March 1, Wednesday</td>
<td>Deadline for declaring option/off-campus study for Term III'</td>
</tr>
<tr>
<td>March 14, Tuesday</td>
<td>End of Winter Term</td>
</tr>
</tbody>
</table>

Spring Term (III), 1978

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>March 27, Monday</td>
<td>Classes Begin</td>
</tr>
<tr>
<td>March 31, Friday</td>
<td>Fees Due; Last day to withdraw without financial penalty</td>
</tr>
<tr>
<td>April 5, Wednesday</td>
<td>Contracts Due</td>
</tr>
<tr>
<td>April 7, Friday (noon)</td>
<td>Last day for contract submission for Term III'</td>
</tr>
<tr>
<td>May 5, Friday</td>
<td>Senior Theses Due</td>
</tr>
<tr>
<td>May 22-26, Mon.-Fri.</td>
<td>Baccalaureate Examinations</td>
</tr>
<tr>
<td>May 23-25, Tues.-Thurs.</td>
<td>Early Registration for Term I (New College Only)</td>
</tr>
<tr>
<td>May 29, Monday</td>
<td>Memorial Day Holiday</td>
</tr>
<tr>
<td>June 1, Thursday</td>
<td>Deadline for declaring option/off-campus study for Term I'</td>
</tr>
<tr>
<td>June 2, Friday</td>
<td>ISP Sign-up Forms and Contracts Due for Summer</td>
</tr>
<tr>
<td>June 5, Monday</td>
<td>End of Spring Term</td>
</tr>
<tr>
<td>June 6, Tuesday</td>
<td>Evaluations due for graduating students</td>
</tr>
<tr>
<td>June 7, Wednesday</td>
<td>Contract Certifications due for graduating students</td>
</tr>
<tr>
<td>June 10, Saturday</td>
<td>Faculty Review of graduating students</td>
</tr>
</tbody>
</table>

*Students who have not submitted contracts to the Office of Records and Registration by noon of this deadline will be considered as withdrawn by default with no refund on cancellation of fees.

*Under no circumstances will students be granted option for the following term past this deadline. Off-campus contracts for the following term should be submitted as soon as possible, following declaration, but must be submitted prior to the first day of the term of the off-campus work.
The College of Nursing is committed to the improvement of nursing and health care services through its education programs, community service, and related research activities. The College offers a National League for Nursing accredited upper division program in nursing that leads to a Bachelor of Science degree with a major in nursing. The program provides two curricula: 1) Curriculum A for generic students (qualified students with no previous preparation in nursing) and 2) Curriculum B for registered nurses who are graduates of diploma and associate degree programs.

Applications from all qualified students are accepted without regard to age, sex, cultural, racial, religious or ethnic background. Qualified students with no previous preparation in nursing and registered nurses who are graduates of associate degree and hospital programs are admitted.

Students may meet all requirements at the University of South Florida or they may complete lower division prerequisites elsewhere and transfer to USF for the nursing major. Students who enroll at the first or second year level at USF are admitted to the Division of University Studies. They meet the same requirements as other applicants for admission to the University and should follow the admission procedures outlined elsewhere in the Bulletin. College graduates and transfer students from other nursing programs are also eligible for admission to the major.

The practice of professional nursing involves problem-solving and decision-making based on knowledge from the humanities and the physical, biological, social and behavioral sciences. Shortages of qualified personnel, technological advances and increasing demands for health care services have brought changes in the functions and responsibilities of those in the health care professions. As a result, nursing practice has become increasingly complex and demanding in terms of knowledge and skills required to assume added responsibilities and functions. The goal of this program is to provide students with opportunities to develop cognitive, affective and psychomotor skills basic to general nursing practice in any setting where professional nursing services are provided: acute care hospitals, community health agencies, extended care facilities, industry, physicians' offices, military health services, the American Red Cross, and so on. The program also focuses on interpersonal and leadership skills essential to meeting their responsibilities as citizens and as professionals in the health care system. An additional goal is that of assisting students to establish investigative and independent study habits that will persist throughout a lifetime of professional growth and development.

The undergraduate program is approved by the Florida State Board of Nursing and graduates of this program are eligible for admission to examinations leading to licensure to practice as professional nurses in the State of Florida or to apply for licensure in other states. Graduates also have the educational background necessary for graduate study in nursing to prepare for expanded roles in clinical nursing practice or for teaching, administration, research and other leadership responsibilities.

Admission to the College

The College of Nursing is a quota program in that limitations are set on enrollments on the basis of availability of sufficient qualified faculty, laboratory and classroom facilities, and clinical resources for nursing practice experience for students. Therefore, admissions are upon a selective basis through special application directly to the College of Nursing. Florida residents are given priority. One class is admitted to Curriculum A in the fall quarter of each year. The deadline for acceptance of applications is February first. Applications may be obtained by contacting the Coordinator of Advisement, College of Nursing.

Transfer students seeking admission to the College of Nursing follow the procedure outlined for transfer students in the USF Bulletin and the procedure outlined here for admission to the College of Nursing. All transfer students must apply for admission to the University and be accepted prior to acceptance by the College of Nursing. Transcripts certifying completion of all requirements for admission must be available to the College of Nursing before admission will be confirmed. Applications for admission to the University may be obtained by contacting the Office of Admissions, University of South Florida, Tampa, Florida 33620. Applications can be submitted as much as one full year in advance of intended enrollment.

Admission procedures for registered nurses vary from those outlined above. Graduates of associate degree and hospital programs in nursing have widely varied backgrounds. Therefore, the admissions process for them is designed to permit evaluation of records, academic advisement and individual program planning early in order to ensure optimum utilization of previous educational experiences and expedite completion of degree requirements.

1. All registered nurses seeking admission to the College of Nursing should submit an application to the College of Nursing. These applications will be sent upon request.

2. When the completed application and transcripts are received, faculty assess them in terms of the requirements for admission to the major. Applicants who have not met the prerequisites will be advised of their standing and the alternatives available for meeting requirements: a) CLEP examinations if appropriate, b) courses at USF, or c) courses at a junior college or other institution. Applicants who have met the requirements for admission will be advised as to when they can be admitted to take courses in the major and (if not already enrolled in the University) will be provided with a USF application stamped "RN Applicant" to complete and forward with admission fee to the Office of Admissions.

3. Registered nurse applicants seeking admission to the major who apply first to the Office of Admissions will be referred to the College of Nursing to complete the process outlined above.

General Requirements

The academic requirements used as a basis for evaluating eligibility of applicants for admission to the upper division major are outlined below. The applicant should realize that these are minimum requirements and that applicants are rated in addition with regard to a number of factors relevant to completion of the program and to professional nursing practice.

A. OVERALL REQUIREMENTS (CURRICULUM A)

1. Completion of 90 quarter (60 semester) hours of college level work with a cumulative average of "C" or better. Credit received on the basis of
CLEP examinations or other appropriate procedures may be included as part of these requirements.

2. Completion of the University of South Florida general education distribution requirements as part of the above. These requirements may be satisfied by the completion of 60 quarter (40 semester) hours in the following areas with not less than 8 quarter hours (6 semester hours) in each area:
1) English Composition
2) Humanities
3) Mathematics/Quantitative Methods
4) Natural Sciences
5) Social Sciences

Students with an A.A. degree will be considered to have met the above requirements.

In the specific course requirements for the nursing major, certain courses are required in the natural sciences and in the social and behavioral sciences. These courses will also apply toward meeting the general education distribution in the natural and social sciences. In addition, the courses taken in statistics or quantitative methods to meet the specific course requirement of the College of Nursing will apply toward meeting one of the mathematics courses required in the general education distribution.

Specific Course Requirements

1. Chemistry: completion (with a “C” or better) of the equivalent of two quarters of chemistry with content in inorganic, organic and biochemistry. (USF: CHM 211, 212). Courses taken at another institution will be evaluated individually on the basis of content included.

2. Biology: completion (with a “C” or better) of at least one year of biology with content including cell structure, genetics and ecology. (USF: BIO 201, 202, 203). Courses taken at another institution will be evaluated individually on the basis of content included. Human anatomy, physiology or microbiology do not meet these requirements.

3. At least one of the above must include laboratory or have a corequisite laboratory course for which the student received credit.

4. Microbiology: completion (with a “C” or better). (USF: MIC 351 or BIO 372). Courses taken at another institution will be evaluated individually on the basis of content included.

5. Completion with a “C” or better, of at least one of the following: anatomy, nutrition (USF: NUR 302, or satisfactory completion of the correspondence course offered by the University of Florida), human growth and development (USF: HUS 427 or a combination of PSY 341 and AGE 301 or PSY 403 and AGE 301). Courses taken at another institution will be evaluated on an individual basis.

6. Social and Behavioral Sciences:
   a) One course in American government (e.g., USF: POL 200, 201, 360, 411, 448) or modern American history (e.g., USF: HTY 212, 306, 307). Courses taken at another institution will be evaluated individually on the basis of content.
   b) Completion, with a “C” or better, of at least four courses in the areas of individual and social/community behavior with at least one course in each area. Any courses in psychology and sociology as well as human growth and development, group dynamics, aging studies, cultural issues, etc., are acceptable. Courses with education prefixes which have content in these areas are also acceptable.

7. Statistics or Quantitative Methods: completion of at least one course in mathematics and one course in statistics or quantitative methods.

All applicants whose applications indicate eligibility for admission are required to be interviewed by College faculty prior to a decision regarding acceptability.

Factors given consideration in evaluating applicants include: cumulative grade point average; grade point average in the specific course requirements (biology, chemistry, social sciences, microbiology and the supporting sciences); substantive changes in academic performance in general education and prerequisite sciences; extent to which applicant meets or exceeds minimum requirements; progress toward completion of A.A. or higher degree in another field; extracurricular, civic, military or employment activities; evidence of commitment to the health field; health status; and ability to communicate (assessed by interview and short essay required at time of interview).

Those applicants with the highest total rankings are accepted in order until the class quota is filled. As vacancies occur prior to the enrollment date, those next on the list are accepted to fill them. Enrollment of all students is contingent upon verification through official transcripts of satisfactory completion of all the minimum requirements outlined above.

B. OVERALL REQUIREMENTS (CURRICULUM B)

1. The academic requirements for admission to Curriculum B, which differ somewhat from those for Curriculum A because consideration is given to previous preparation and experience, include the following:
   a) An overall “C” average for all prior college level work attempted.
   b) Eligibility to return to last institution attended.
   c) Current licensure to practice as a registered nurse.

2. Registered nurses from hospital schools may be admitted to the major after completion of 45 hours in the general education distribution (described under Curriculum A) with no less than 8 quarter hours in each of the five areas. This policy, which differs from that in effect for generic students, has been developed to provide more flexibility for registered nurses in moving through the program on a part-time basis. However, admission to the College does not insure enrollment in those courses that have supporting science prerequisites.

3. Registered nurses with an Associate of Science or Associate in Arts degree in nursing are eligible for admission to the major providing they have met general education distribution requirements as described above.

4. Registered nurses who possess an Associate of Arts degree (other than in nursing) are eligible for admission to the University and will be considered to have met general education distribution requirements of the University. However, the College requires in mathematics, social and behavioral sciences, and physical and biological sciences must be met prior to graduation.

5. Registered nurses may receive up to 20 hours of credit for previous nursing education and/or experience or satisfactory performance on proficiency examinations. These credits will be allocated as elective credits and will not apply toward meeting the University requirement of 60 upper division credits or toward meeting the requirements of the upper division nursing major.

6. Priority for admission is given to Florida residents who are currently engaged in the practice of nursing in the State or who have practiced during the past five years and plan to return to practice upon graduation.
General Education Requirements

All registered nurse applicants must have completed 45 quarter (30 semester) hours in general education with not less than 8 quarter (6 semester) hours in each of the five areas prior to enrollment in the major. These credits may be obtained by any one or any combination of the methods listed below:

1. Successful completion of the work at an approved college or university. Students with an A.A. degree (other than in nursing) will be considered to have met these requirements.
2. Successful performance in College Level Examination Program general tests and appropriate subject examinations. College regulations permit up to 67.5 hours in advanced standing credit (including 45 hours of the general distribution requirement) for successful performance on CLEP examinations.
3. Successful performance on the Standardized Subject Matter Test (USST), a United States Armed Forces Institute Examination.

There are specific course requirements for graduation with a B.S. degree with a major in nursing which are also applicable toward the general education distribution. While not all of these are required for admission to the major, some are prerequisite to courses in the major. With careful consideration to program planning, the student may meet these major requirements and at the same time meet requirements of the general education distribution. These requirements are outlined below:

1. Mathematics—a total of 8 quarter hours, including one course in general mathematics or college algebra and one course in elementary statistics or quantitative methods.
2. Social Sciences—a total of 18-24 quarter hours with at least one course in American government or modern American history and a minimum of four courses in individual and social/community behavior (at least one course in each of these areas). All courses must be completed with a grade of "C" or better. Courses in psychology, sociology, cultural and medical anthropology, gerontology, behavioral sciences, growth and development and life cycle may apply toward meeting this requirement. (Students may CLEP general psychology, growth and development, American government and American history).
3. Physical and Biological sciences—a minimum of 18-20 quarter hours must be earned, but this requirement can be met through many different combinations of basic and/or advanced physical and biological science courses. All courses taken toward meeting this requirement must have been completed with a "C" or better.

Program Leading to the Baccalaureate Degree

The College of Nursing offers one undergraduate program with a major in nursing (NUR).

Degree Requirements

Students are certified for the Bachelor of Science degree with a major in nursing upon completion of 180 quarter hours of credit distributed among the general education distribution, supporting sciences, minimum requirements of the major and electives. A cumulative grade point ratio of 2.0 or better must be maintained throughout the program. At least 60 quarter hours must be upper division level work (courses numbered 300 or above). Overall requirements, which differ for Curriculum A and Curriculum B, are outlined below:
CURRICULUM A

The clinical nursing courses emphasize wellness as well as illness and focus on prevention of disease and maintenance of health as well as care and rehabilitation of those with acute and chronic illness. The clinical nursing courses include substantial theory and nursing practice in the care of the physically and chronically ill; in preventive, health maintenance, and rehabilitative services; and for functioning as members of nursing and health care teams in highly responsible and complex patient care settings.

The upper division major is built upon the general education and sciences discussed above as prerequisites for admission and is composed of supporting sciences, required nursing courses, and electives.

The supporting sciences required of all Curriculum A nursing majors include:

*NUR 301 Human Anatomy (4)
*NUR 302 Nutrition (4)
*MIC 351 Microbiology (4), or
*BIO 372 Man, Microbe, and Molecule (4)
*HUS 427 Life Cycle (5)
NUR 304 Human Physiology (5)

Nursing Courses

Junior Year (3 quarters) Senior Year (3 quarters)
NUR 303 (4) NUR 400 (5)
NUR 305 (3) NUR 401 (5)
NUR 310 (5) NUR 402 (2)
NUR 306 (2) NUR 403 (3)
NUR 307 (5) NUR 404 (5)
NUR 308 (5) NUR 405 (5)
NUR 309 (2) NUR 406 (2)
NUR 407 (3) NUR 408 (7)
NUR 409 (2) **NUR 412 (1-5)
**NUR 483 (2-12)

CURRICULUM B

Curriculum B of the upper division major is built upon the general education and supporting science base described above and includes additional supporting sciences, required nursing courses and electives. At least 60 quarter hours at the upper division level with at least 45 quarter hours in nursing courses (not to include human physiology and nutrition) are required for graduation.

In addition to supporting science requirements outlined in Overall Requirements (Curriculum B), the following are required for graduation. These requirements may be met as outlined below:

1. Human Physiology—at least one course that includes content in (1) normal cellular and functional organization of human body and (2) normal function of body systems. This requirement may be met by NUR 304 at USF or by a comparable transfer course.

2. Nutrition—at least one course in nutrition (3 quarter hours) that includes normal and therapeutic nutrition for all age groups and effects of cultural, religious, and socioeconomic factors impacting upon food patterns of individuals and groups. This requirement may be met as follows: (1) course credit by transfer or at USF; (2) satisfactory performance on the challenge examination offered by College of Nursing; (3) satisfactory performance in the University of Florida correspondence course in nutrition.

The required nursing theory and clinical practice courses are as follows:

NUR 340 (4) NUR 353 (5) NUR 451 (3-5)
NUR 350 (4) NUR 403 (3) NUR 458 (5-7)
NUR 351 (5) NUR 412 (1-5) NUR 483 (2-12)
NUR 352 (4) NUR 450 (5)

Nursing courses for both Curriculum A and B include substantial theory and nursing practice in the care of the physically and mentally ill, the young and the old, the acutely and chronically ill. They also provide opportunities for learning in health maintenance, preventive and rehabilitative services and for functioning as members of nursing and health care teams in highly responsible and complex patient care settings. Learning experiences in nursing are developed and guided by registered professional nurses with graduate preparation in clinical nursing. Nursing practice experiences are provided in a variety of institutions and agencies involved in the delivery of nursing services.

Electives

The number and kinds of electives taken will depend upon the number of credits needed to fulfill the 180 quarter hour requirement for the degree and upon individual interest and goals. They may be chosen by the student from language, literature, fine arts, natural science, etc.; from areas relating to nursing roles and relationships—e.g., management, health education, mental retardation, gerontology, urban problems, race relations, women's studies, biological or physical sciences, social or behavioral sciences, statistics; or from NUR 483, Selected Topics in Nursing.

Special Requirements for Nursing Majors

Tuition and fees for students enrolled in nursing are the same as for other undergraduate students at the University of South Florida. However, there are substantial expenses not covered by the basic tuition and fees.

Textbooks, laboratory manuals and standardized tests are essential tools for students enrolled in the nursing major. Texts in nursing are somewhat more expensive than those in general education, and it is estimated these costs run from $35.00-$50.00 per quarter. Since texts are used over the two year major, these costs are somewhat higher at the junior level.

Uniforms, including watch with sweep second hand, scissors, shoes, stethoscope, etc., are required after the first quarter of the junior year. Uniform specifications and policies have been developed by students enrolled in the first class and costs vary depending upon personal choice. In addition, lab coats or aprons are necessary during the first quarter.

Medical care insurance is required.

Professional liability insurance is highly desirable for all and required for registered nurse students.

An annual physical examination is required. The first one must be done before enrollment in courses involving patient contact in Quarter II of the junior year.

Transportation to and from community health agencies for clinical nursing experience is also the responsibility of the student. Since public transportation in the Tampa area is not usually convenient to the hours of clinical schedules, students must have access to some other means of transportation or form car pools. Also, from time to time, field trips to an institution or agency at some distance from the campus will be required for an entire class or section of a class. In these instances, students making the trip share the costs.

Financial Aid

Policies and procedures pertaining to financial aid are the same for students in nursing as for other students. Specific information can be obtained from the Office of Financial Aid, Student Affairs, University of South Florida, Tampa, Florida 33620.
The social and behavioral sciences are concerned with human beings and their development, problems, behavior, and institutions. The study of man helps the student to understand the world of which he/she is a part, to become a more informed citizen, and to prepare for a role in contemporary society. The social and behavioral sciences provide the student with knowledge, experience, and background for future application in business and industry, government, human service professions, and graduate education.

Three programs in the college—Urban Community Psychology, Gerontology, and Urban Anthropology—have been approved by the Board of Regents as Programs of Distinction. Although the programs are housed respectively in the Department of Psychology, the Aging Studies Program, and the Department of Anthropology, they utilize faculty expertise from many disciplines. Approval has been requested to extend the Program of Distinction to include Communicology, Criminal Justice, Geography, Political Science, Rehabilitation Counseling, and Sociology to further emphasize the human sciences and services. Students majoring in these areas receive distinctive educational experiences in both university and community settings.

The College of Social and Behavioral Sciences has established the Human Resources Institute to address critical issues in the broad human resources sector through a comprehensive program of research and service. The following Centers are related to the Human Resources Institute: Center for Community Psychology, Center for Applied Anthropology, Center for Evaluation Research, Center for Applied Gerontology, and Center for Community Development and Analysis.

**BACCALAUREATE LEVEL DEGREE PROGRAMS**

**Admission to the College**

Admission to the College of Social and Behavioral Sciences is open to students who have been accepted to the University of South Florida and who declare a major in a particular field within the college.

Undergraduate students must submit a formal application for admission to the college. This application is available in the Office of the Coordinator of Advising. Students will then be counseled by an academic adviser in his/her major field. Information about majors, departments, programs, advising, and other services of the college may be obtained from the Coordinator of Advising, College of Social and Behavioral Sciences, University of South Florida, Tampa, Florida, 33620.

Any student in the University may take courses in the College of Social and Behavioral Sciences. Students in other colleges or adults in the community may select social and behavioral science courses of particular interest.

**Social Science Building**

**General Requirements for Degrees**

The College of Social and Behavioral Sciences currently offers two undergraduate degrees: Bachelor of Arts and Bachelor of Social Work. Requirements for graduation (referred to on page 33) are summarized as follows:

1. **180 credits with at least a “C” average (2.0) in courses taken at the University of South Florida. At least 60 of these 180 credits must be in courses numbered 300 or above. (A maximum of four credits of physical education courses may be counted toward graduation requirements; no credits in physical education are required.)**
2. **60 hours of general distribution courses as required by the University in the areas of English Composition, Fine Arts and Humanities, Mathematics and Quantitative Methods, Natural Sciences, and Social and Behavioral Sciences. (See General Distribution Requirements, page 32).**
3. **Completion of a major in a subject or an integrated major, with at least a “C” average (2.0). (See following pages for requirements in specific majors offered in the college.)**
4. **120 credits outside the major, including 90 credits outside the College of Social and Behavioral Sciences. These requirements are designed to insure breadth of academic experience.**
5. **Credits transferred from other institutions will not be included in the computation of the grade point average for graduation. To be eligible for graduation with honors requires at least a 3.5 average in USF work and all previous college work.**
6. **A student must complete at least 45 of the last 90 credits in academic residence at USF. The approval of the dean of the college granting the degree must be secured for any transfer credits offered for any part of these last 90 hours.**

Students are encouraged to consult with an academic adviser in his/her major. It must be noted, however, that the student assumes full responsibility for satisfying all University, college, and departmental requirements for graduation.
Programs Leading to the Baccalaureate Degree

The College of Social and Behavioral Sciences offers a major in 14 fields as described in the following pages. In addition to the departmental majors, interdisciplinary majors are offered. (See Interdisciplinary Social Sciences, International Studies, and Social Science Education listed below.) Economics offers two majors, one in the College of Social and Behavioral Sciences and the other in the College of Business Administration.

A Bachelor of Arts Degree is offered in the following:
- Afro-American Studies (AFA)
- Anthropology (ANT)
- Anthropology-Linguistics (ANL)*
- Criminal Justice (CJP)
- Economics (ECN)
- Geography (GPy)
- History (HTY)
- Interdisciplinary Social Sciences (SSI)
- International Studies (INT)
- Political Science (POL)
- Psychology (PSY)
- Sociology (SOC)
- Social Science Education (SSE)**

A Bachelor of Social Work Degree (B.S.W.) is also offered.

GRADUATE LEVEL DEGREE PROGRAMS

Master’s Degree Programs

Graduate level courses are now offered in most social and behavioral science areas. The Master of Arts Degree is offered in the following:
- Anthropology (ANT)
- Criminal Justice (CJP)
- Geography (GPy)
- Gerontology (AGE)*
- History (HTY)
- Political Science (POL)
- Psychology (PSY)
- Rehabilitation Counseling (REH)
- Post-Baccalaureate
- Rehabilitation Counseling (REF)
- 5-year program
- Sociology (SOC)

* Offered by the Aging Studies Program

In addition to the Master of Arts degree offered from the College of Social and Behavioral Sciences, joint degrees are offered with the College of Education in Social Science Education, School Psychology, and the Junior College Teachers’ Program.

The Department of Communicology (formerly Speech Pathology and Audiology) in the college offers a Master of Science degree in the following:
- Audiology (AUD)
- Post-Baccalaureate
- Audiology (AUF)
- 5-year program
- Aural (Re) Habilitation (ARH)
- Post-Baccalaureate
- Aural (Re) Habilitation (ARF)
- 5-year program
- Speech Pathology (SPP)
- Post-Baccalaureate
- Speech Pathology (SPF)
- 5-year program

Doctor of Philosophy

The Department of Psychology offers a program leading to the degree of Doctor of Philosophy.

SPECIAL NON-DEGREE PROGRAMS

The AGING STUDIES undergraduate program consists of a core of courses designed for interested students. These courses are AGE 301, 325, 405. Additional information will be found in the Aging Studies Program section of the catalog.

The OFF-CAMPUS TERM PROGRAM offers a wide variety of opportunities for self-designed, supervised educational experiences for credit. This program is presently housed administratively in the Department of Interdisciplinary Social Sciences, and the courses are listed under Off-Campus Term (OCT) and Social Sciences Interdisciplinary (SSI).

The WOMEN’S STUDIES PROGRAM consists of courses designed to deal with historical, anthropological, sociological, and psychological aspects of the woman’s role and of the female experience. This program is presently housed in the Department of Interdisciplinary Social Sciences, and the courses are listed under Women’s Studies (WSP).

The HUMAN SERVICES COURSES (HUS) are designed for students interested in careers in the human sciences and services, and may be taken in conjunction with any major or by special students. These courses are coordinated by the Aging Studies Program, and the courses are listed as HUS 326, 327, 426, 427, 428, 429, 526.

PROGRAMS AND CURRICULA

AFRO-AMERICAN STUDIES

Afro-American Studies Program provides a quality undergraduate education leading to a Bachelor of Arts degree in Afro-American Studies. Essentially it is a service program which provides opportunities for all students to broaden the bases of their knowledge of the entire human experience and intercultural understanding so essential to living in a multi-racial society and a world that has become a global village. It provides a new horizon in liberal education that seeks reunification of the knowledge of human experience and strikes at the narrowness and ethnocentrism of the traditional disciplines which have contributed much to race prejudice and misunderstanding. Part of its mission is to assist its black student clientele to achieve a more dignifying identity and fuller participation in the mainstream of American life. It attempts to help them to develop a greater awareness of themselves and their talents and to provide them educational and research opportunities necessary for the acquisition of under-
standing of political and economic realities and tools that must enable black people and other minorities to become effective determinants of their own political and economic life.

Admission to Afro-American Studies major is open to all students who have been duly admitted to the University of South Florida by the Office of Admissions and who file necessary papers in the Office of the Coordinator of Advising, College of Social and Behavioral Sciences, to declare a major in the field. All of the program's courses are open to all other students — regular and special — of the University.

Requirements for the B.A. Degree:
The major in Afro-American Studies consists of a minimum of 56 hours in the field specified as follows:

- **Required Core Courses (20 cr. hrs.)**
  - AFA 230 (4)
  - AFA 333 (4)
  - AFA 334 (4)
  - AFA 336 (4)

- **Required Supporting Courses (12 cr. hrs.)**
  - AFA 343 (4)
  - AFA 440 (4)
  - AFA 484 (4)
  - AFA 432 (4)

- **Suggested Elective Courses (24 cr. hrs.)**
  - AFA 337 (4)
  - AFA 341 (4)
  - AFA 428 (4)
  - AFA 431 (4)

 Majors must maintain a minimum of 2.0 average and are also responsible for fulfilling College and University general education requirements.

### AGING STUDIES

**Undergraduate Program**
Although no baccalaureate degree in gerontology is offered, the Aging Studies Program does provide a core of four courses at the undergraduate level. These courses range from AGE 301, Introduction to Gerontology, to AGE 405, Seminar in Selected Topics in Social Gerontology, and are designed as electives for students from a variety of areas, particularly the human service areas. More generally, the objective of the sequence of undergraduate courses is to provide students with a broad educational experience in gerontology.

**The Human Services Courses**
The HUMAN SERVICES COURSES are designed for students interested in careers in the human sciences and services, and may be taken in conjunction with any major, or by special students. They are closely related to our Urban Community Psychology and Gerontology Program of Distinction and will be taught by qualified faculty from the various disciplines within the college. The Human Services sequence is coordinated by the Aging Studies Program.

**Center for Applied Gerontology**
The Center for Applied Gerontology is one of five specialized centers in the New Human Resources Institute within the College of Social and Behavioral Sciences. The activities of the Center include research on aging, program evaluation, short-term training of agency personnel, the collection and dissemination of resource materials on death, dying and grief, and other activities intended to complement the educational program in gerontology.

**Graduate Program**
The primary objective of the graduate program in aging is to train personnel for leadership positions in the planning, development, delivery, and evaluation of community services for older persons. In keeping with this objective, the program offers a broad range of cross-disciplinary courses. As an important part of the training process, each graduate student spends a supervised internship for one academic quarter in a community agency or facility which provides services for older persons. A Master of Arts degree in Gerontology is awarded upon satisfactory completion of the requirements.

### Requirements for the M.A. Degree in Gerontology:
The M.A. degree requires five quarters of full-time study— or the part-time equivalent thereof—including one quarter of supervised field experience. The courses in the degree program were developed specifically to meet the objectives of the program and are offered under the label AGE. The M.A. degree in Gerontology requires a minimum of 54 credit hours in approved AGE courses. Prior to beginning the program, each student will confer with a departmental adviser who will thoroughly review the student's academic background, experience, and career interests and developments an approved, individualized curriculum from the available AGE courses. Required courses for the M.A. degree include:

- AGE 690 (2) AGE 692 (2) AGE 696 (12)
- AGE 691 (2) AGE 693 (2)

Majors are also required to take a minimum of 34 hours from the following:

- AGE 501 (4) AGE 530 (4) AGE 608 (4)
- AGE 502 (4) AGE 585 (1-3) AGE 610 (4)
- AGE 503 (4) AGE 601 (4) AGE 611 (1-6)
- AGE 504 (4) AGE 603 (4) AGE 612 (1-6)
- AGE 507 (4) AGE 605 (4)
- AGE 509 (4) AGE 606 (4)

There are no language or thesis requirements. However, following completion of the necessary coursework, there will be a comprehensive examination designed to test the student's knowledge of and ability to integrate key concepts and information in the field of gerontology. This examination must be taken and passed before the student begins the required field placement.

**Admission Requirements**
To be eligible for admission to the M.A. program, the applicant must:

1. Hold a baccalaureate degree or its equivalent from an accredited college of university.
2. Have a minimum score of 1000 on the Graduate Record Examination (total of Quantitative and Verbal Aptitude scores) plus a minimum grade point average of 2.5 (A = 4.0) on the last half of courses taken for the bachelor's degree.
   
   or
   
3. Have a minimum score of 900 on the Graduate Record Examination (total of Quantitative and Verbal Aptitude scores) plus a minimum grade point average of 3.0 (A = 4.0) on the last half of courses taken for the bachelor's degree.

Preference is given to applicants who demonstrate commitment to or experience in the field of aging.

Special consideration may be given to mature students (25 years of age or older) who demonstrate commitment to or experience in the field of aging.

In addition to the University Graduate Studies application, a program application is required and should be obtained from the Aging Studies Program. Entering full-time students are ordinarily admitted only in the Fall Quarter (September) each year. At that time, a new cycle of courses begins and runs for five academic quarters.

### ANTHROPOLOGY (ANT/ANL)
Anthropology aims at comprehending people as biological and social beings. It is concerned with all forms of people...
through time and space. One consequence of this broad-ranging view is the presence within anthropology of four branches: physical anthropology, archaeology, cultural anthropology, and linguistics. Exposure to anthropological information and the cross-cultural perspective produces heightened sensitivity in the student to the world about him/her. This helps the student to adopt an intellectual posture of disciplined skepticism with respect to any scheme which purports to define and account for regularities in human life. In response to an increasing interest on the part of students, an undergraduate focus in applied anthropology has been created to offer the Department's majors the option of including career training as a part of their anthropology curriculum. The focus includes emphasis in applied anthropology coursework and a practicum course in which the student applies anthropological method and theory in off-campus settings.

The primary objective of the graduate program is to provide both basic education and specialized training in several specific fields of applied anthropology which will enable the graduate to render valuable and substantive service at local, state, national, and international levels in a context of non-academic, non-teaching employment. Graduates will be capable of assuming vital positions in the various agencies and institutions charged with understanding acting on the complex problems which beset our society. Because of the sequential nature of the graduate courses, entering students are ordinarily admitted only in the Fall Quarter (September) each year. At that time a new cycle of courses begins.

**Requirements for the B.A. Degree in Anthropology (ANT):**

The major in Anthropology consists of a minimum of 44 credit hours in the field. Students may take more than this minimum if they desire. ANT 201 is prerequisite to all subsequent courses. ANT 311, 321, 331, and LIN 301 are required as intermediate level training in the main subdivisions of the field and ANT 461 and ANT 491 complete the specific course requirements. Majors may not include more than two each of any of the 400-level courses in the total of the 44 hours required. Anthropology majors are required to take Social Science Statistics (SSI 301) or the equivalent, and urged to become competent in the use of a foreign language. Exceptions to course prerequisites require the consent of the instructor.

**Required Core Courses (28 cr. hrs.)**

- ANT 201 (4)
- ANT 321 (4)
- ANT 491 (4)
- LIN 301* (4)
- ANT 331 (4)
- ANT 461 (4)

**Requirements for the B.A. Degree in Anthropology—Linguistics (ANL):**

This sequence is designed for students who are particularly interested in the role of language in human behavior and cultural development.

**Required Core Courses (43 cr. hrs. minimum)**

- ANT 201 (4)
- ANT 461 (4)
- LIN 301* (4)
- ANT 311 (4)
- ANT 491 (4)
- LIN 401 (4)
- ANT 321 (4)
- ANT 431 (3-6)
- ANT 331 (4)
- ANT 401 (3-6)
- ANT 441 (3-6)

**Required Supporting Courses (12 cr. hrs. minimum from the following group)**

- LIN 321 (4)
- LIN 441 (4)
- PSY 405 (4)
- LIN 405 (4)
- SSI 301 (4)
- PSY 441 (4)
- LIN 431 (4)
- PHI 531 (4)
- SPE 503 (5)

*One section of LIN 301 is for anthropology majors and requires ANT 201 as a prerequisite.*

**Requirements for the M.A. Degree**

General requirements for graduate work are listed on page X X and should be studied carefully.

The student must complete 49 quarter hours of graduate course work. All students must complete the four core seminar courses, then proceed to take minimally, one methods course, one selected topics course, and one regional problems course in one of the three tracks (medical anthropology, urban anthropology, public archaeology). In addition, each student must complete a graduate level statistics course, for a minimum of four quarter hours, and two graduate-level courses, normally taken outside the department, for a minimum of six quarter hours, chosen in mutual agreement by the student and his/her adviser; successfully pass the comprehensive examination; undertake directed research; and write a thesis. The student must maintain a "B" average in all course work. In addition, our program requires a "B" average for the four core seminars before the student can proceed to take the comprehensive examination.

**I. COURSES REQUIRED OF ALL STUDENTS**

A. Core Courses

- ANT 601 (4)
- ANT 621 (4)
- ANT 631 (4)
- ANT 611 (4)

B. Additional Requirements

Two graduate-level courses normally taken outside the department; one graduate-level statistics course;

- ANT 681 (1-15)
- ANT 699 (1-6)

**II. COURSES IN ONE OF THREE TRACKS**

A. Medical Anthropology Track

- ANT 641 (4)
- ANT 651 (4)
- ANT 661 (4)

B. Urban Anthropology Track

- ANT 644 (4)
- ANT 654 (4)
- ANT 664 (4)

C. Public Archaeology Track

- ANT 647 (4)
- ANT 657 (4)
- ANT 667 (4)

**COMMUNICOLOGY**

(AUD/AUF/ARH/ARF/SPP/SPF)

A Master of Science Degree is offered through the Department of CommunicoLOGY that is structured to meet the preparation requirements of the American Speech and Hearing Association for the Certificate of Clinical Competence or the national basic certification requirements of the Council on Education of the Deaf. In addition to the core subject material each student may elect to pursue a program of specialization in the areas of Speech Pathology, Audiology or Aural (Re)Habilitation.

Undergraduate students enroll in a five-year program terminating in the Master of Science degree in Speech Pathology, Audiology or Aural (Re)Habilitation. Students may apply for acceptance in the M.S. degree program upon attaining Junior Class Standing, completion of the CLY 300-level course sequence with a 3.0 grade average, submitting cumulative Graduate Record Examination scores of 850 or greater, and demonstrating competency in communication skills as determined by the Chairperson or his delegate. Students may not apply for a baccalaureate degree. Programs are planned through the master's degree at the time of acceptance.

Applicants holding a baccalaureate degree from an accredited college or university with appropriate prerequisite coursework will be eligible for admission if the following minimal requirements are met:

1. Submission of a cumulative score of 1000 or greater for the GRE aptitude tests plus a grade point average of 3.0 (A=4.0) for the last half of their undergraduate coursework.
2. Submission of three satisfactory letters of recommendation for graduate study, and
3. Demonstration of competency in communication skills as determined by the Chairperson or his delegate.
Requirements for the M.S. Degree in Speech Pathology—Post-Baccalaureate (SPP):

General requirements for graduate work are already delineated by the University’s Division of Graduate Studies. A minimum of 45 credits is required as well as completion of sufficient coursework and practicum to meet the American Speech and Hearing Association’s requirement for clinical certification in speech. The attainment of clinical competence as determined by a minimum GPA of 3.0 in CLY 698 and the approval of a majority of the academic staff of the Department of Communicology is also required for graduation. The student with an existing bachelor's degree and appropriate prerequisites may plan his/her degree program from among the following courses with approval of the Department Chairperson or his delegate:

CLY 511 (6) CLY 579 (4) CLY 680 (4)
CLY 513 (6) CLY 580 (4) CLY 683 (4)
CLY 571 (6) CLY 583 (4) CLY 684 (6)
CLY 572 (6) CLY 598 (1-12) CLY 685 (6)
CLY 574 (6) CLY 620 (4) CLY 698 (1-12)
CLY 575 (4) CLY 621 (4) CLY 699 (6)
CLY 576 (4) CLY 622 (4)
or
CLY 577 (4) CLY 623 (4) CLY 681 (var.)
CLY 578 (4) CLY 675 (4)

Requirements for the Combined Undergraduate/Graduate M.S. degree in Speech Pathology (SPF):

A minimum total of 225 credits is required for the combined undergraduate/graduate M.S. program. In addition to the General Distribution requirements the following courses will be required for all programs:

CLY 301 (6) CLY 572 (6) CLY 621 (4)
CLY 302 (6) CLY 574 (6) CLY 622 (4)
CLY 311 (6) CLY 575 (4) CLY 680 (4)
CLY 312 (6) CLY 576 (4) CLY 684 (6)
CLY 313 (6) CLY 577 (4) CLY 698 (1-12)
CLY 498 (1-12) CLY 578 (4) CLY 699 (6)
CLY 498 (1-12) CLY 580 (4) CLY 698 (1-12)
or
CLY 511 (6) CLY 583 (4) CLY 681 (var.)
CLY 513 (6) CLY 598 (1-12)
CLY 571 (6) CLY 620 (4)

Plus one of the following:

CLY 579 (4) CLY 675 (4)

In addition, sufficient and appropriate coursework (approved by the Chairperson or his delegate) will be included to meet the preparation requirements of the American Speech and Hearing Association for the Certificate of Clinical Competence. The attainment of clinical competence as determined by a minimum GPA of 3.0 in CLY 698 and the approval of a majority of the academic staff of the Department of Communicology is also required for graduation.

Requirements for the M.S. Degree in Audiology—Post Baccalaureate (AUD):

General requirements for graduate work are already delineated by the University’s Division of Graduate Studies. A minimum of 45 credits is required as well as sufficient coursework and practicum to meet the American Speech and Hearing Association’s requirement for clinical certification in Audiology. The attainment of clinical competence as determined by a minimum GPA of 3.0 in CLY 698 and the approval of a majority of the academic staff of the Department of Communicology is also required for graduation. The student with an existing bachelor's degree and appropriate prerequisites may plan a program from among the following courses with approval of the Department Chairperson or his delegate:

CLY 512 (6) CLY 580 (4) CLY 680 (4)
CLY 513 (6) CLY 583 (4) CLY 684 (6)
CLY 571 (6) CLY 598 (1-12) CLY 685 (6)
CLY 572 (6) CLY 673 (4) CLY 698 (1-12)
CLY 573 (6) CLY 674 (4) CLY 699 (6)
CLY 574 (6) CLY 675 (4)
or
CLY 575 (4) CLY 676 (4) CLY 681 (var.)
CLY 579 (4) CLY 677 (4)

Requirements for the Combined Undergraduate/Graduate M.S. Degree in Audiology (AUF):

A minimum of 225 credits is required for the combined program. In addition to the General Distribution requirements the following courses will be required for all programs:

CLY 501 (6) CLY 571 (6) CLY 675 (4)
CLY 502 (6) CLY 572 (6) CLY 676 (4)
CLY 511 (6) CLY 573 (6) CLY 677 (4)
CLY 512 (6) CLY 575 (4) CLY 680 (4)
CLY 513 (6) CLY 579 (4) CLY 684 (6)
CLY 543 (6) CLY 580 (4) CLY 698 (1-12)
CLY 598 (1-12) CLY 583 (4) CLY 699 (6)
CLY 512 (6) CLY 673 (4) or
CLY 513 (6) CLY 674 (4) CLY 681 (var.)

Plus one of the following:

CLY 574 (6) CLY 685 (6)

In addition, sufficient and appropriate coursework (approved by the Department Chairperson or his delegate) must be included to meet the preparation requirements of the American Speech and Hearing Association for the Certificate of Clinical Competence in Audiology. The attainment of clinical competence as determined by a minimum GPA of 3.0 in CLY 698 and the approval of a majority of the academic staff of the Department of Communicology is also required for graduation.

Requirements for the M.S. Degree in Aural (Re)Habilitation—Post Baccalaureate (ARH):

General requirements for graduate work are already delineated by the University’s Division of Graduate Studies. A minimum of 45 credits is required as well as sufficient coursework, practicum and internship to meet the Florida State Department of Education certification requirements for specialization with the hearing impaired and to meet the national basic certification requirements of the Council on Education of the Deaf. The attainment of clinical competence as determined by a minimum GPA of 3.0 in CLY 698 and the approval of a majority of the academic staff of the Department of Communicology is also required for graduation. Students may plan programs with emphasis in the areas of preschool, school age, multiply handicapped, and adult hearing impaired. All teachers of the deaf programs will be planned from among courses offered by the appropriate teacher preparation areas within the College of Education as well as from the following:

CLY 498 (6) CLY 598 (1-12) CLY 685 (6)
CLY 503 (6) CLY 673 (4) CLY 698 (1-12)
CLY 572 (6) CLY 675 (4) CLY 699 (6)
CLY 577 (4) CLY 676 (4) or
CLY 580 (4) CLY 680 (4) CLY 681 (var.)
CLY 583 (4) CLY 684 (6)

Requirements for the Combined Undergraduate/Graduate M.S. Degree in Aural (Re)Habilitation (ARF):

A minimum of 225 credits is required for the combined programs as well as sufficient coursework, practicum and internship to
meet the Florida State Department of Education certification requirements for specialization with the hearing impaired and to meet the national basic certification requirements of the Council on Education of the Deaf. The attainment of clinical competence as determined by a minimum GPA of 3.0 in CLY 698 and the approval of a majority of the academic staff of the Department of Communicology is also required for graduation. Students may plan programs with emphasis in the areas of preschool, school age, multiply handicapped, and adult hearing impaired. In addition to the General Distribution requirements all teacher of the deaf programs will be planned to include coursework from the appropriate teacher preparation areas within the College of Education as well as from the following:

CLY 301 (6) CLY 572 (6) CLY 680 (4)
CLY 302 (6) CLY 577 (4) CLY 684 (6)
CLY 311 (6) CLY 579 (4) CLY 685 (4)
CLY 312 (6) CLY 580 (4) CLY 698 (1-12)
CLY 331 (6) CLY 583 (4) CLY 699 (6)
CLY 482 (6) CLY 673 (4) or
CLY 513 (6) CLY 675 (4) CLY 681 (var.)
CLY 598 (1-12) CLY 676 (4)

CRIMINAL JUSTICE (CJP)

The major in criminal justice provides students with an in-depth exposure to the total criminal justice system including law enforcement, detention, the judiciary, corrections, and parole. The program concentrates on achieving balance in the above aspects of the system from the perspective of the criminal justice professional, the offender, and society.

The objective of the graduate program in criminal justice is to develop a sound educational basis for professional training in one or more of the specialized areas comprising the modern urban Criminal Justice System.

Requirements for the B.A. Degree:

A minimum of 53 quarter hours is required of all undergraduate majors* in Criminal Justice including the following courses or their equivalents:
CJP 300 (5) CJP 302 (4) CJP 491 (3)
CJP 301 (4) CJP 315 (8) CJP 499 (12)

In addition to the above, a minimum of 17 hours in Criminal Justice selected by the student complete the requirements.

*In-service students are required to take only 4 hours of CJP 499, thus reducing their major course credits to 45 quarter hours.

Any student who receives a grade of "D" or lower in more than one USF CJP course will be automatically barred from continuing as a Criminal Justice major. This applies only to students whose first CJP course was taken during Fall Quarter (I) 1975 or thereafter.

Requirements for the M.A. Degree:

University requirements for graduate study are given on page 47. Additionally, each graduate applicant should submit three letters of recommendation, a letter of intent to the Department of Criminal Justice, and show successful completion of an acceptable undergraduate social science introductory statistics course or equivalent. Further information may be obtained by contacting the Director of Graduate Studies of the Department of Criminal Justice.

Requirements for graduation for all M.A. candidates will consist of:

1. 45 credits of CJP course work (or approved equivalents) which include:
CJP 601 (4) CJP 603 (4) **CJP 693 (1)
CJP 602 (4) CJP 660 (4)

2. Completion of a thesis; CJP 699.

All course work counted toward the degree must have the prior approval of the student's major professor and the Director of Graduate Studies of the Criminal Justice program.

ECONOMICS (ECN)

Requirements for B.A. Degree

Economics is one of the vital disciplines investigating the complex problems and relationships in modern society. Indeed, the very breadth of economics had led to major areas within the discipline, including labor economics, international economics, urban and regional economics, monetary economics, public finance, industrial organization, comparative economic systems, and the like. In addition, students are given a sound grounding in economic theory and economic statistics to facilitate the investigation of the problems of human behavior, decision-making and organizational effectiveness in these problem areas.

A student may earn a Bachelor of Arts degree with a major in Economics by completing satisfactorily 48 credits in Econom­ics in addition to College requirements. These 48 credits include:

ECN 201 (4) ECN 301 (5) ECN 401 (5)
ECN 202 (4) ECN 323 (5)
ECN 231 (3) ECN 331 (5)

In addition to this core, students are encouraged to select 300-level courses in several of the applied areas during their junior year. The remaining economics electives may be selected from those 300 and 400 level courses that provide the type of program that best suit the students' interests and objectives. Additional flexibility in pursuing these interests is provided by the ECN 481 and ECN 497 courses. However, not more than 10 hours of credit may be earned in ECN 481 and ECN 497.

Students majoring in economics are encouraged to supplement their programs with appropriate courses in other social sciences. Political science, psychology, sociology and others contribute greatly to an enriched plan of study. Similarly, a variety of courses in economics are designed to permit students majoring in other disciplines to acquire the skills and insights provided in economics. The Department of Economics offers a concentration area for majors in the other social sciences. The concentration area will be designed for the individual student's program. Thus students have the option of broad interdisciplinary programs, a general grounding in many areas of economics, and a more intensive concentration in one of the areas within economics.

Students interested in majoring in economics or having a concentration area are encouraged to contact the departmental adviser for more information about the program. In addition, the department maintains a file describing the varied career opportunities for economists in business, government, and education.

GEOGRAPHY (GPY)

Requirements for the B.A. Degree:

Geography as a discipline is designed to account for the variable character of the earth's surface. The two major divisions of geography are physical and cultural (human). Physical geography includes the study of earth-sun relationships, weather, climate, and natural features of the landscape such as landforms, soils, vegetation, and hydrology. Cultural geography studies people, their various cultures, levels of technology, and economic activities which operate differentially to alter the natural landscape.

Geography's overriding purpose is to understand the earth as the home of man. A major concern of geography is the wise
use of natural, human, and economic resources. Therefore, ecological and environmental considerations are central to the study of geography.

Students are encouraged to take elective credits in a wide variety of disciplines because of the cross-disciplinary approach of geography. Both social and natural sciences are recommended.

Geography majors generally teach or work in various planning, resource management, or consulting agencies, both private and governmental at all levels—local, state, and federal.

A major in geography consists of 50 credit hours as follows:

**Required Core Courses (24 cr. hrs.)**

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<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>GPY 301 (5)</td>
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<tr>
<td>GPY 377 (5)</td>
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<tr>
<td>GPY 491 (5)</td>
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<tr>
<td>GPY 302 (5)</td>
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<td>GPY 421 (5)</td>
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<tr>
<td>GPY 303 (5)</td>
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<tr>
<td>GPY 441 (5)</td>
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</tbody>
</table>

Plus one regional course numbered 460 through 473.

**Electives in geography (10 cr. hrs.)**

Any 10 hours in GPY 400- or 500-level courses.

**HISTORY (HTY)**

**Requirements for the B.A. Degree:**

A minimum of 48 quarter hours is required for a major in history. 16 hours of 200-level courses, or their equivalent, constitute the lower level requirements. HTY 487, 491, and 492 constitute the upper level requirements for the degree. At least 20 hours of course work must be drawn from the 300-400 level. With the prior written consent of the student’s adviser, majors may take up to eight (8) hours of course work offered by other departments and apply these hours toward meeting the course requirements in history. The course work undertaken outside the Department of History must complement the student’s program in history.

It is recommended that history majors take ENG 350, "Advanced Expository Writing," SPE 201, "Fundamentals of Speech Communication," LLI 200, "Use of the Library," and 27 quarter hours drawn from the following disciplines: Afro-American Studies, Anthropology, Economics, Geography, Political Science, Interdisciplinary Social Sciences, Psychology, Philosophy, Sociology, Literature, the Humanities, and the Fine Arts. Majors intending to pursue graduate work should take a minimum of two years of classical or modern foreign language.

**Requirements for the M.A. Degree:**

The graduate curriculum in history is composed of a core program, a thesis, and course work in the following fields: Field I, American history to 1877; Field II, American history since 1877; Field III, Early Modern European history; Field IV, Modern European history; Field V, Ancient and Medieval history; Field VI, Latin American history.

In addition to the general requirements of the University, a candidate is required to complete a total of 48 credit hours divided as follows: 8 hours of core courses; 16 hours in a major field; 8 hours in a minor field; 8 hours of thesis, and 8 hours of electives. Of the 48 hours, at least 30 must be in formal, regularly scheduled course work, 24 of which must be at the 600 level. Subject to the satisfaction of above requirements, courses at the 500 level are acceptable as part of a planned degree program and in special circumstances major advisers may approve up to 8 hours at the 400 level with the definite understanding that additional and superior work will be required of the graduate student. The core courses, HTY 600, 601 are required of all candidates.

A reading proficiency in one foreign language must be demonstrated. A satisfactory preparation in the core program, two fields, the completion of a comprehensive examination, and a thesis are required for graduation.

**INTERDISCIPLINARY SOCIAL SCIENCES (SSI/INT)**

The Department of Interdisciplinary Social Sciences administers the College major and the major in International Studies; it offers a non-degree program in Women's Studies; it administers the Off-Campus Term Program.

**The College Major (SSI): Requirements for the B.A. Degree:**

The college major offers students whose educational and vocational interests and objectives cross disciplinary lines an opportunity to undertake a program of study individually designed to serve those interests and objectives. That program of study must include 64 credits in courses offered in the college of which 12 must be taken in courses bearing the SSI prefix (Interdisciplinary Social Sciences) and one of these must be SSI 301, Social Science Statistics.

Within these parameters each student's program of study is to be evolved in consultation with and must be formally approved by the major adviser, who is located in the College's Office of the Coordinator of Advising. The program of study must include an area of concentration of at least 20 credits in one discipline; it will normally be expected to include a second area of concentration with either a disciplinary or multidisciplinary focus. The choice of areas of concentration and of courses within them is to be directly related to the educational goals of the student and such as to provide an educational experience of excellent quality.

**International Studies (INT): Requirements for the B.A. Degree:**

The major in International Studies is designed to enable students to undertake programs of study based upon the course offerings of not less than three departments of the college, which will emphasize (a) preparation for careers in international activities, or (b) the study of particular international themes or topics, or (c) the study of particular regions or cultures.

The program of study is developed by each student in consultation with the major adviser so as to best serve the individual's educational goals. The program is to include not less than 48 credits. Of these 24 (6 courses) must be in the international studies offerings of the Department of Interdisciplinary Social Sciences, bearing the prefix SSI.

**Required Core Courses (24 cr. hrs.)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>SSI 300 (4)</td>
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<tr>
<td>SSI 449 (4)</td>
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<tr>
<td>SSI 491 (4)</td>
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<tr>
<td>SSI 361 (4)</td>
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</tbody>
</table>

**One of the following:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>SSI 339 (4)</td>
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<tr>
<td>SSI 343 (4)</td>
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<tr>
<td>SSI 347 (4)</td>
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<tr>
<td>SSI 341 (4)</td>
<td></td>
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<tr>
<td>SSI 345 (4)</td>
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</table>

**One of the following with international content:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>SSI 383 (2-5)</td>
<td></td>
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<tr>
<td>SSI 481 (1-4)</td>
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<tr>
<td>SSI 485 (1-4)</td>
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</tbody>
</table>

The additional 24 credits (6 courses) required must be selected from course offerings of at least two other departments which have international, regional, or cultural content.

**Required Supporting Courses**

18 cr. hrs. (or equivalent proficiency) of appropriate foreign language.

Students will be provided with advice as to choices of other courses offered throughout the University which will best reenforce and complement their major program. Each student's program must be planned with the international studies adviser who is empowered to make appropriate substitutions when educationally justified. Up to nine credits may be substituted for these requirements by successfully passing SSI 395 (1-9).
Off-Campus Term

The Off-Campus Term Program, described more in detail elsewhere in this Bulletin, is a university-wide, interdisciplinary program which urges students to spend part of their time in college in pursuits that are self-designed and implemented in an environment entirely off-campus and out of the classroom. OCT provides for an "education in life" for full academic credit as an alternative to the traditional methods of learning.

Women's Studies Program

The Women's Studies Program offers a concentration of interdisciplinary courses focusing on the role of women in the modern world. Several of its courses are cross-listed with those of other departments, such as Anthropology and Psychology.

POLITICAL SCIENCE (POL)

Requirements for the B.A. Degree

The undergraduate program leading to the B.A. in political science offers a general purpose degree, and a number of more specialized alternatives. These include the pre-professional plan in political science, the pre-law plan in political science and honors in political science. The program is designed for students interested in and seeking to understand political problems and issues, the nature of the political process, as well as the philosophical and legal bases of political structures and processes at local, state, and national levels within the United States and elsewhere. Satisfying the degree requirements prepares students for positions in the public and private sectors, for law school, for graduate work in political science and related disciplines, for positions in education, and for applied political activity.

A minimum of 48 credit hours is required to satisfy the requirements of the major. Students must take the eight credit hours which make up the core curriculum, and a total of 10 courses (40 credit hours) in political science, of which at least four courses must be above the 300 level. For instructional purposes, the political science curriculum is divided into seven fields. However, there are no field requirements. Students are free to select courses from any and all fields within the curriculum. The undergraduate curriculum in political science is composed of the following:

- **Required Core Courses** (8 cr. hrs.)
  - POL 200 (4)
  - POL 315 (4)

- **Electives from the seven fields** (40 cr. hrs.)

Field I Political Theory

- POL 310 (4)
- POL 412 (4)
- POL 510 (4)
- POL 311 (4)
- POL 413 (4)
- POL 515 (4)
- POL 411 (4)
- POL 414 (4)
- POL 516 (4)

Field II Comparative Government and Politics

- POL 320 (4)
- POL 427 (4)
- POL 520 (4)
- POL 426 (4)

Field III International Relations

- POL 330 (4)
- POL 432 (4)
- POL 433 (4)
- POL 331 (4)

Field IV American National and State Governments

- POL 200 (4)
- POL 343 (4)
- POL 449 (4)
- POL 201 (4)
- POL 346 (4)
- POL 540 (4)
- POL 341 (4)
- POL 447 (4)
- POL 342 (4)
- POL 448 (4)

Field V Urban Government and Politics

- POL 350 (4)
- POL 452 (4)
- POL 551 (4)
- POL 352 (4)
- POL 453 (4)
- POL 451 (4)
- POL 550 (4)

Field VI Public Administration

- POL 360 (4)
- POL 561 (4)
- POL 564 (4)
- POL 466 (4)
- POL 562 (4)
- POL 560 (4)
- POL 563 (4)

Field VII Law and Politics

- POL 370 (4)
- POL 374 (4)
- POL 473 (4)
- POL 371 (4)
- POL 471 (4)
- POL 571 (4)
- POL 373 (4)
- POL 472 (4)
- POL 574 (4)

The following courses are not included within any of the seven fields, but may still be used as elective hours:

- POL 481 (1-8)
- POL 491 (4)
- POL 492 (4)
- POL 482 (4)

Pre-professional Plan in Political Science

This plan is designed for students seeking an intensive undergraduate concentration in political science. Typically, students electing this plan will be oriented towards graduate work in political science or other social sciences. A minimum of 52 credit hours is required.

Students must take eight credit hours of required courses:

- POL 200 (4)
- POL 315 (4)

Eleven additional courses in political science (44 cr. hrs.) must be taken, of which at least seven must be above the 300 level. Concentration within fields will be encouraged.

Honors in Political Science

Honors in political science is designed for the outstanding undergraduate who seeks an intensive program plus academic recognition during the senior year. Admission to the honors sequence, which is available to all undergraduate majors, will be controlled by grade point average, personal interviews and close scrutiny of the student's program and record. Students admitted will participate in an honors seminar, POL 491 (4) and will write an honors thesis, POL 492 (4).

Field Work

The Department of Political Science has a field work program which provides students with part-time internships with local government in the Tampa Bay area and with political parties at the state and local level. Academic credit is available for such internships. For further information, contact the Department of Political Science.

Requirements for the Pre-Law Plan in Political Science

The Department of Political Science offers a pre-law plan designed for the undergraduate considering a career related to law: Field VII of the undergraduate curriculum (Law and Politics). The courses making up the Field are of particular interest to law-oriented students, but may be taken by others as well. The Department seeks to guide majors to those courses which develop skills and provide information needed for good performance in the study of law. The department also seeks to give students the skills and information needed for entry into a number of law-related positions in business and government. An integral part of this plan is a high degree of student access to the Department's pre-law adviser.

Prior to admission to a law school, a student must take the Law School Admission Test (LSAT). This test is given by the Educational Testing Service of Princeton, New Jersey.

The Law School Admission Test is given simultaneously several times each year at the University of South Florida and numerous other testing centers throughout the state. Students should plan to take the test no later than February of the year in which they make application to a law school. Information pamphlets and application forms for the test are obtainable from the Department of Political Science, University of South Florida. (Pre-law is not a prescribed program of study. No specific college major is required for admission to law school. Those students intending to pursue the study of law must obtain a
Bachelor of Arts degree in an area of personal choice. It is generally agreed that a good lawyer must have knowledge and understanding of the political, economic, and social context within which legal problems arise.

Requirements for the M.A. Degree

The graduate program leading to the M.A. in political science is designed to offer advanced general instruction in political science and public administration on national, state, and local levels of government. It prepares its graduates for positions of responsibility in the public and private sectors as well as in research, teaching, and study at the doctoral level.

General requirements for graduate study are given on page 47.

The student must complete a minimum of 45 credit hours of graduate level courses, of which at least 24 hours must be at the 600 level. A minimum of 30 credit hours must be taken in formal, regularly scheduled classes. Courses at the 500 level are accepted for credit towards the degree when taken as part of a planned program, with the approval of the student's adviser and the Department of Political Science.

A minimum of 28 credit hours must be taken in political science; eight credit hours of approved electives may be taken outside the department. All graduate students must write a thesis (nine credit hours) or petition for substitution with 12 credit hours of regular courses.

All students must pass a comprehensive examination in order to satisfy the degree requirements. This examination normally will be given following the completion of the thesis. Students whose petitions for the non-thesis option have been approved will be permitted to take the examination upon successful completion of at least 40 credit hours.

Students who do not have an undergraduate major in political science, or its equivalent, may be admitted to the program upon the consent of the department. Such students may be asked to take additional courses beyond the minimum requirements. Students must be registered as full-time graduate students for at least one quarter of study.

All graduate students are required to take the graduate core curriculum:

- POL 610 (4)
- POL 515 or POL 516 (4)

For instructional purposes, the graduate curriculum in political science has been divided into seven fields:

**Field I: Political Theory**
- POL 510 (4)
- POL 610 (4)
- POL 616 (4)

**Field II: Comparative Government and Politics**
- POL 520 (4)
- POL 626 (4)
- POL 627 (4)
- POL 620 (4)

**Field III: International Relations**
- POL 630 (4)
- POL 631 (4)

**Field IV: American National and State Governments**
- POL 540 (4)
- POL 641 (4)
- POL 647 (4)
- POL 640 (4)
- POL 646 (4)
- POL 648 (4)

**Field V: Urban Government and Politics**
- POL 550 (4)
- POL 650 (4)
- POL 652 (4)
- POL 551 (4)
- POL 651 (4)
- POL 653 (4)

**Field VI: Public Administration**
- POL 560 (4)
- POL 564 (4)
- POL 667 (4)
- POL 561 (4)
- POL 660 (4)
- POL 668 (4)
- POL 562 (4)
- POL 661 (4)
- POL 563 (4)
- POL 666 (4)

**Field VII: Law and Politics**
- POL 571 (4)
- POL 670 (4)
- POL 671 (4)
- POL 574 (4)

The following non-field courses may be used as elective hours:

- POL 681 (1-8)
- POL 685 (4)
- POL 699 (9)
- POL 683 (4)
- POL 697 (var.)

**Plans of Study**

Students may select one of two course plans:

**Plan I: General Degree Plan**
- a) 2 core courses (POL 610 and either POL 515 or POL 516)
- b) 5 courses in one or two major fields
- c) 2 courses may be elected outside the department
- d) other courses to be specified on an individual basis from any field within the graduate curriculum

**Plan II: Public Administration and Urban Affairs Plan**
- a) 2 core courses (POL 610 and either POL 515 or POL 516)
- b) POL 660
- c) 5 courses in public administration and/or urban affairs
- d) 2 courses may be elected outside the department
- e) other courses to be specified on an individual basis from any field within the graduate curriculum

More detailed instructions may be obtained from the Department of Political Science.

**PSYCHOLOGY (PSY)**

The undergraduate program in Psychology offers the student a well-rounded Liberal Arts education, together with the opportunity to gain a special acquaintance with issues such as those concerning man's role in modern society, tactics of social change, personal adjustment, and educational goals and strategies. In addition, the program provides excellent background training for qualified students who wish to pursue graduate work in disciplines such as clinical, experimental, or industrial psychology, education, aging studies, counseling, women's studies, black studies, or community relations.

The faculty of the Psychology Department is divided into three broad program areas: Clinical-Community, Experimental-Physiological, and Industrial-Organizational. Each of these program areas offers M.A. and Ph.D. level training as well as instruction at the undergraduate level. Members of the Clinical-Community faculty offer coursework and training in the areas of abnormal psychology, developmental psychology, behavior modification, psychotherapy, personality, and psychological assessment. Individual research experience is also available to qualified students. Members of the Experimental-Physiological faculty provide coursework and, for qualified students, direct and extensive research experience, in the areas of comparative psychology, electrophysiology, learning and conditioning, human memory, perception, and information processing. Members of the Industrial-Organizational faculty offer coursework and special training in areas including selection, training and evaluation of employees, job motivation and satisfaction, small group analysis, organizational theory, and human factors.

Requirements for the B.A. Degree:

All majors must complete:
- PSY 200 (4)
- SSI 301 (4)
- PSY 311 (4)
- PSY 300 (4)
- PSY 402 or PSY 441 (4)
- PSY 405 or PSY 445 (4)
- PSY 403 or PSY 404 (4)
- PSY 452 or PSY 455 (4)

and select four courses as follows:
- PSY 402 or PSY 441 (4)
- PSY 405 or PSY 445 (4)
- PSY 403 or PSY 404 (4)
- PSY 452 or PSY 455 (4)

In addition, 12 elective credits in psychology courses must be completed. PSY 411 (4) is strongly recommended for all majors and required of students planning graduate training. Functional mathematics and biological science are recommended. Otherwise, students majoring in psychology are encouraged to complete a varied undergraduate program.
Admission to Graduate Study:

Applications for admission to the Ph.D. degree program are considered only once per year, for admission into the program in September of that year. The deadline for completed applications is March 1. A completed application includes a complete transcript of college work, a copy of scores on the GRE Aptitude Test, and three letters of recommendation (preferably from college instructors). Admission to the program is on a competitive basis. Details concerning the program, including a description of the credentials needed to be competitive with other applicants, and the Graduate Program in Psychology Handbook, are available from the Chairman, Graduate Admissions Committee, Department of Psychology, USF, Tampa, Florida 33620.

All graduate applicants are accepted to work toward the Ph.D. Work on the M.A. is considered as the initial portion of the Ph.D. Program. The M.A. is not intended to be the terminal degree.

Requirements for the M.A. Degree:

General requirements for graduate study are given on pages 47-48.

The student must complete 50 credit hours of graduate psychology courses. All students must take at least two of the three methods courses, each of which must have a different topic, listed under PSY 631. In addition, the student must complete a minimum of five of the following ten courses:

- PSY 609 (5)
- PSY 635 (5)
- PSY 641 (5)
- PSY 612 (5)
- PSY 636 (5)
- PSY 642 (5)
- PSY 614 (5)
- PSY 638 (5)
- PSY 634 (5)
- PSY 639 (5)

The selection of these courses will be made by mutual agreement of the student and his advisory committee. Students with prior work in these areas may waive any of these courses by successfully passing a special examination given by the Psychology Department. Successful waiver may be used to reduce the overall credit hours requirement, if approved by the Psychology Department. A research thesis, PSY 699, is required and the student must successfully pass an oral examination of the thesis as well as maintain a B average in course work, exclusive of thesis and research courses.

In addition to the M.A. degree in psychology, the Psychology Department and the Department of Educational Psychology in the College of Education jointly grant the M.A. degree in School Psychology (PSE). (See College of Education, page 65.)

Requirements for the Ph.D. Degree:

The Ph.D. in Psychology is offered in the fields of Clinical, General Experimental, and Industrial-Organizational Psychology. Specific requirements are determined by the student and his supervisory committee.

Assuming that the student has completed an M.A. degree in Psychology or its equivalent, the Psychology Department requires the following in addition to the general University requirements for the Ph.D. degree, on page 48:

1. Reading knowledge of two foreign languages, or substitution for either or both languages by demonstrated competency in an area or areas approved by the Psychology Department. Two substitutive areas currently approved are computer usage skills and electronics skills.
2. Supervised undergraduate psychology teaching experience.
3. A one-year internship in an approved clinical facility for Ph.D. students in the Clinical Psychology program.
4. Six months of internship in approved industries or community agencies as available for Ph.D. students in the Industrial-Organizational Psychology program.

REHABILITATION COUNSELING (REH/REF)

Requirements for the M.A. Degree:

General requirements for graduate work are given on pages 47-48.

The M.A. program in Rehabilitation Counseling requires a minimum of 60 credit hours and offers the student the flexibility of entering while a University senior (REF) or after earning a baccalaureate degree (REH).

Minimum admission requirements for students electing the five-year approach include completion of 135 quarter hours, a score of at least 1000 on the GRE or a B average on all work beyond 90 credit hours, three letters of recommendation, and a personal interview. All General Distribution requirements must be completed and students may not apply for a baccalaureate degree.

Minimum admission requirements for students entering the program as regular graduate students after they have earned a baccalaureate degree include a score of at least 1000 on the GRE or a B average during the last two years of college work, three letters of recommendation, and a personal interview.

The GRE must be taken by all students before applying to the program and the scores received by the department before the admission deadline.

Requirements for graduation for all students include a minimum of 60 credit hours in the post-baccalaureate program and a total of no less than 225 for those in the five-year program. The following 50-hour core courses are consistent with national certification standards for rehabilitation counselors and must be taken by all students:

- REH 501 (5)
- REH 508 (2)
- REH 610 (4)
- REH 502 (5)
- REH 602 (5)
- REH 611 (2)
- REH 503 (5)
- REH 606 (3)
- REH 620 (10)
- REH 507 (4)
- REH 608 (5)

Additional hours to complete either the minimum of 60 credit hours or the minimum of 225 credit hours may be elected from other REH offerings or from related graduate programs, with the consent of the student's adviser. There are no language or thesis requirements; however, a comprehensive examination is required involving both written and practical work.

SOCIOLOGY (SOC)

As an undergraduate major, sociology provides students with three different kinds of program concentrations. One, attractive to the majority of possible students, may be described as "useful sociology." Many of the courses taken involve skills valuable in employment. For example, in a research methods course, interviewing skills can be used in sales, personnel work, social action careers, management, as well as in research. Similarly, careers which involve inter-personal relations can benefit enormously from courses in social psychology or small group analysis. Also, pre-professional training, as in law school, business administration, social work, and the like, can rest on courses that have "useful" aspects in them. Another concentration can be styled that of "liberal education." In this concentration, the central point is the question of the nature of man, the social being. Experience has shown that the truly liberally-educated person is prepared for a variety of life experiences because that person understands how to ask important questions and how to go about getting answers. More importantly, the liberally-educated person is equipped to take seriously the matter of being a human being. Sociology courses are aimed largely at problems on the nature of one's social world, the nature of man collectively, and on the individual person—the student as a unique being. Finally, sociology can be a major in the sense that it represents an intellectual discipline. Some students will find
that it is interesting in its own right and that they would like to continue educational pursuits beyond the bachelor's degree.

These different concentrations differ as much in the attitude of the student taking the courses as in the selection of courses making up the individual program of study. They are not logically distinct concentrations: any one course may have elements of all three. For example, a student majoring in sociology as an academic discipline may at the same time involve himself in questions of a liberal education and at the same time pick up skills which will lead to satisfying employment. Students should understand that sociology majors are not restricted to social work or even social action types of careers.

Careers for which a major in sociology seems appropriate, judging from those who have so majored and succeeded in their fields, cover a wide range of lines utilizing interpersonal relations. Law, for example, is well predicated on sociology. So are personnel related careers, as in counseling. Similarly, knowledge of social relations, social structure, and class differences appear valuable to the entire spectrum of sales opportunities. Generally speaking, any career dealing with the public in a direct or indirect way will benefit from training in sociology. The benefits derive either from the knowledge gained or the skills (as in interviewing, a fundamental aspect of any formal system of people interacting with each other), or both. Specific elective courses should reflect individual differences; and the student's departmental major adviser will assist each one in making particular choices.

Requirements for the B.A. Degree:

The major consists of a minimum of 40 credit hours. The following courses may not be counted in the 40-hour minimum for the major but may be elected as additional courses: SOC 181, 251, 326, 401, 481. A model program of recommended sequences may be obtained from the Department of Sociology.

Transfer students should be aware that by University regulations, the equivalent of one academic year must be taken in "on-campus" courses. In Sociology, we require that of the 40 credits needed to make up the major, no more than 10 credits earned elsewhere can count towards the major, and in addition, the 10 credits offered for the major must reflect courses offered here. The purpose of this rule is to insure that our certification that an individual has majored in sociology genuinely reflects our understanding of sociology as a major and that there is no fundamental difference between the transfer student and those whose work was entirely or mostly completed at the University of South Florida.

Required Core Courses (16 cr. hrs.)
SOC 201 (4)  SOC 321 (4)  SSI 301 (4)
SOC 315 (4)

Additional Requirements (8 cr. hrs.)
One course of:
SOC 331 (4)  SOC 433 (4)  SOC 535 (4)

One course of:
SOC 341 (4)  SOC 345 (4)  SOC 443 (4)

Requirements for the M.A. Degree:

A minimum of 45 credit hours and a thesis.

Required Courses (23 cr. hrs.)
SOC 611 (4)  SOC 623 (5)  SOC 699 (8)
SOC 621 (4)  SOC 690 (2)

University requirements for graduate study are given on pages 47-48.

Admission to the M.A. Program: Satisfactory score on the Graduate Record Examination (Aptitude); two letters of refer-
ence from previous instructors; four courses in sociology, including statistics, theory, and methods of research (SSI 301, SOC 315, and SOC 321, or equivalent). Documents are sent to the Office of Admissions. Instructions for applicants are available from the Department of Sociology.

### SOCIAL WORK (SOK)

The University of South Florida offers a program leading to a Bachelor of Social Work (B.S.W.) degree in the College of Social and Behavioral Sciences. This program has been developed in accordance with the guidelines set forth by the Council on Social Work Education, the national accrediting body for social work education programs, and in accordance with the recommendations of the National Association of Social Workers, the national professional association.

The B.S.W. Program is designed to: (1) prepare students for beginning professional social work practice in public and private social service agencies and organizations; and (2) prepare students for graduate study in social work or other human service professions. In view of this dual responsibility the B.S.W. Program is planned to provide the student with both theoretical and practical foundations necessary for professional practice and graduate education.

In preparing the B.S.W. graduate for beginning professional practice the curriculum provides the student with an opportunity to develop a heuristic knowledge base and skill base as a "generalist" practitioner. The student will develop an understanding of various interpretive methods, and skill in their application to a variety of client systems. For example, interpretive methods may take the form of individual and group counselling, resource development, consultation, teaching, advocacy, etc. Client systems may be individuals, families, groups, community groups, organizations, social welfare institutions, etc. The student will develop an understanding of the dynamics of human behavior in individual, group and organizational contexts and the influences of the socio-cultural environment upon those behaviors. The student will learn about the development of social welfare systems and institutions and the social, economic, and political processes affecting policy development and program implementation. The student will develop an understanding of the utilization of basic social research skills particularly related to the process of planning and evaluation.

The student will also become aware of the value base of the profession and engage in a self-examination process as it relates to the development and reflection of ethical and effective professional practice. The Social Work Program, as any professional program, places great emphasis on the development of a professionally responsible graduate in terms of one's obligations to the client system served, the profession itself, the organization in which one works, and to the general public which ultimately provides any profession with legitimacy.

Enrollment in the B.S.W. Program is limited. Unlike a strictly academic program, where the student may declare a major, the B.S.W. Program is a limited access program. Students may apply for admission to the Program after having satisfied the admission criteria described below. However, the completion of the prerequisites does not guarantee the student's admission to the Program. Largely because of limited state funds available for higher education, and also to maintain high quality by avoiding overcrowding, it may be necessary to deny admission to the Program solely on the grounds that there is no room for additional students. Any student filing intent to seek admission or actually applying for admission to the Program should be aware of this possibility.

Additionally, any student who does not maintain a Grade Point Average (GPA) of at least 2.75 while enrolled in the B.S.W. Program, or who clearly does not exhibit responsible professional behavior, may be subject to suspension or dismissal from the Program.

### Admission to the Social Work Program

To be considered for admission to the B.S.W. Program as a major, a student must satisfy certain criteria. Specific admission criteria may be waived for a student who is a regular employee of a social service agency. In such instances, supporting documentation of skills and experience from an agency may be used in waiving a requirement. Generally, a student must meet the following requisites:

1. A student must be admitted to the University of South Florida.
2. A student must have filed a formal declaration of intent to major in Social Work with the College of Social and Behavioral Sciences, followed by a statement to the B.S.W. Program of intent to apply for admission into the program, at least one quarter in advance of application for admission.
3. A student must have completed all the General Distribution Requirements for the bachelor's degree and hold a minimum of Junior class standing.
4. A student must have a minimum grade point average of 2.75 on transfer to USF or have achieved a minimal grade point average of 2.75 in work at USF.
5. A student must have completed the prerequisite course, SOK 300, Theory and Practice of Social Work I, with a minimum grade of B.
6. A student must file a formal application for admission to the Social Work Program and provide the names and addresses of three persons who can serve as references to the student's character and abilities.
7. A student must participate in a personal admissions interview with an Admissions Committee.

Waiver of the foregoing specific criteria may be considered by the Social Work Program upon presentation of documentation of extremely unusual circumstances. An example of such a circumstance might be a person, though not currently employed in a social service agency, possesses a number of years of experience in the field.

### Requirements for the B.S.W. degree:

1. Social Work Practice Courses
   - SOK 411 (5)
   - SOK 412 (5)
2. Social Welfare Policy & Service Courses
   - SOK 405 (4)
3. Human Behavior & Social Environment Courses
   - HUS 427 (5)
   - SOK 420 (4)
4. Social Research Courses
   - SSI 301 (4)
   - SOK 330 (4)
5. Directed Field Experience
   - SOK 440 (15)
6. Additional Requirements
   - SOK 301 (4)
   - POL 360 (4)
   - Approved Electives (8)

**Summary:**

| Core courses | 43 credits |
| Field Experience | 15 |
| Approved Electives | 8 |
| Total | 66 credits |
Courses offered for credit by the University of South Florida are listed on the following pages in alphabetical order according to subject area.

This section incorporates the new Statewide Common Course Numbering System, mandated by the Florida Legislature, under which all state universities and community colleges in Florida utilize the same prefix and number for identical courses offered by the various institutions. In the transitional stage of this innovative system, courses are listed in order of the existing USF number, even though the State Common Course number appears first in the title line.

The first line of each description includes the State Common Course prefix and number, USF course prefix and number (in parentheses), title of the course, and number of credits.

Credits separated by a colon indicate concurrent lecture and laboratory courses taught as a unit:

**PHY 2050 (PHY 201-202) GENERAL PHYSICS AND LABORATORY** (4:1)

Credits separated by commas indicate unified courses offered in different quarters:

**AMH 2010, 2020 (HTY 211, 212) AMERICAN HISTORY I, II** (4,4)

Credits separated by a hyphen indicate variable credit:

**RED 7848 (EDR 733) ADVANCED CLINICAL PRACTICUM IN READING** (4-8)

The abbreviation "var." also indicates variable credit:

**ACC 6905 (ACC 681) DIRECTED RESEARCH** (var.)

A long dash in place of the State Common Course number indicates that a State number has not yet been assigned to that course:

---(BOT 612) BIOLOGY OF TROPICAL PLANTS (3)

The following abbreviations are utilized in various course descriptions:

- **GR** See Grades in the Graduate Program heading in the Division of Graduate Studies
- **PR** Prerequisite (Note: Prerequisites refer to USF course numbers, not State common course numbers.)
- **CJ** With the consent of the instructor
- **CC** With the consent of the chairperson of the department or program
- **CR** Corequisite
- **Lec.** Lecture
- **lab** Laboratory
- **Lec.-dem.** Lecture and demonstration
- **Lec.-pro.** Lecture and problem

---

**COURSE LEVELS**

Course numbers indicate levels of study, as follows:

- under 300 lower level (freshmen and sophomores)
- 300-499 upper level (juniors and seniors)
- 500-599 for seniors and graduate students only
- 600-899 for graduate students only

---

Course descriptions are listed alphabetically by USF prefix under the following department and program headings:

- Accounting (ACC)
- Afro-American Studies (AFA)
- Aging Studies (Gerontology) (AGE)
- American Studies (AMS)
- Anthropology (ANT)
- Art (ART)
- Astronomy (AST)
- Biology (BIO)
  - Botany (BOT)
  - Microbiology (MIC)
  - Zoology (ZOO)
- Chemistry (CHM)
- Communicology (CLY)
- Cooperative Education (COE)
- Criminal Justice (CJP)
- Dance (DAN)
- Economics (ECN)
- Education:
  - Art Education (EDA)
  - Curriculum (EDC)
  - Elementary Education (EDE)
  - English Education (EDT)
  - Exceptional Child Education (EDS)
  - Foreign Language Education (EDX)
  - Foundations (EDF)
  - Guidance (EDG)
- Engineering:
  - Basic Engineering (EGB)
  - Electrical and Electronic Systems (EGE)
  - Energy Conversion and Mechanical Design (EGR)
  - Industrial Systems (EGS)
  - Structures, Materials, & Fluids (EGX)
  - Computer Service Courses (ESC)
  - Engineering Technology (ETK)
- English (ENG)
- Environment (ENV)
- Health Education (HEN)
- Humanities Education (EDY)
- Junior College Education (EDH)
- Library-Audiovisual Education (EDL)
- Measurement-Research-Evaluation (EDQ)
- Music Education (EDM)
- Natural Science-Mathematics Education (EDN)
- Physical Education for Teachers (EDP)
- Reading Education (EDR)
- Social Science Education (EDW)
- Speech Communication-English Education (EDT)
- Vocational and Adult Education (EDV)
- Finance (FIN)
- Foreign Languages:
  - General Foreign Languages (FOL)
  - Arabic (ARA)
  - Classics (CLS)
  - French (FRE)
  - German (GER)
  - Greek (GRE)
  - Hebrew (HEB)
  - Italian (ITA)
  - Latin (LAT)
  - Portuguese (POR)
  - Romance (ROM)
  - Russian (RUS)
  - Spanish (SPA)
- General Business Administration (GBA)
- Geography (GPY)
- Geology (GLY)
- History (HTY)
- Human Services (HUS)
- Humanities (HUM)
- Interdisciplinary Language-Literature (LLI)
- Liberal Studies (ALA)
- Linguistics (LIN)
- Management (MAN)
- Marine Science (MSC)
### Cross-Listing of Departments and Programs Alphabetically by USF Prefix

<table>
<thead>
<tr>
<th>Department/Program</th>
<th>USF Prefix</th>
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<tbody>
<tr>
<td>Accounting</td>
<td>ACC</td>
</tr>
<tr>
<td>Afro-American Studies</td>
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<td>Liberal Studies</td>
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<td>AMS</td>
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<tr>
<td>Ancient Studies (Religious Studies)</td>
<td>ANC</td>
</tr>
<tr>
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</tr>
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<td>Arabic (Foreign Languages)</td>
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<tr>
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<tr>
<td>Criminal Justice</td>
<td>CJP</td>
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<tr>
<td>Classics (Foreign Languages)</td>
<td>CLS</td>
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<td>CLY</td>
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<tr>
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<td>Mass Communications</td>
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<td>ECN</td>
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<td>EDA</td>
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<tr>
<td>Curriculum (Education)</td>
<td>EDC</td>
</tr>
<tr>
<td>Elementary Education (Education)</td>
<td>EDE</td>
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<tr>
<td>Foundations (Education)</td>
<td>EDF</td>
</tr>
<tr>
<td>Guidance (Education)</td>
<td>EDG</td>
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<td>Junior College Education (Education)</td>
<td>EDH</td>
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<td>EDL</td>
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<td>EDM</td>
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<td>EDN</td>
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<td>EDP</td>
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<td>Measurement-Research-Evaluation (Education)</td>
<td>EDQ</td>
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<td>EDR</td>
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<td>Exceptional Child Education (Education)</td>
<td>EDS</td>
</tr>
<tr>
<td>English Education and Speech Communication-English Education (Education)</td>
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<td>Vocational &amp; Adult Education (Education)</td>
<td>EDV</td>
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<td>Social Science Education (Education)</td>
<td>EDW</td>
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<tr>
<td>Foreign Language Education (Education)</td>
<td>EDX</td>
</tr>
<tr>
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<td>EDY</td>
</tr>
<tr>
<td>Basic Engineering (Engineering)</td>
<td>EGB</td>
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<tr>
<td>Electrical &amp; Electronic Systems (Engineering)</td>
<td>EGE</td>
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<td>Energy Conversion &amp; Mechanical Design (Engineering)</td>
<td>EGR</td>
</tr>
<tr>
<td>Industrial Systems (Engineering)</td>
<td>EGS</td>
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<tr>
<td>Structures, Materials &amp; Fluids (Engineering)</td>
<td>EGX</td>
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<td>English</td>
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<tr>
<td>Environment</td>
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<tr>
<td>Computer Service Course (Engineering)</td>
<td>ESC</td>
</tr>
<tr>
<td>Engineering Technology</td>
<td>ETK</td>
</tr>
<tr>
<td>Nursing (NUR)</td>
<td>FIN</td>
</tr>
<tr>
<td>Off-Campus Term (OCT)</td>
<td>FOL</td>
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<td>Philosophy (PHI)</td>
<td>FRE</td>
</tr>
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<td>GBA</td>
</tr>
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<td>GER</td>
</tr>
<tr>
<td>Political Science (POL)</td>
<td>GLY</td>
</tr>
<tr>
<td>Psychology (PSY)</td>
<td>GPY</td>
</tr>
<tr>
<td>Rehabilitation Counseling (REH)</td>
<td>GRE</td>
</tr>
<tr>
<td>Religious Studies (REL)</td>
<td>HEB</td>
</tr>
<tr>
<td>Ancient Studies (ANC)</td>
<td>HEN</td>
</tr>
<tr>
<td>Social Sciences, Interdisciplinary (SSI)</td>
<td>HUM</td>
</tr>
<tr>
<td>Social Work (SOK)</td>
<td>HUS</td>
</tr>
<tr>
<td>Sociology (SOC)</td>
<td>ITA</td>
</tr>
<tr>
<td>Speech Communication (SPE)</td>
<td>LAT</td>
</tr>
<tr>
<td>Theatre (TAR)</td>
<td>LIN</td>
</tr>
<tr>
<td>Women's Studies (WSP)</td>
<td>LLI</td>
</tr>
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<td>MAN</td>
</tr>
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<td>MED</td>
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<td>MET</td>
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<td>MIC</td>
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<td>MIS</td>
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<tr>
<td>German (Foreign Languages)</td>
<td>MKT</td>
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<tr>
<td>Geology</td>
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<tr>
<td>Geography</td>
<td>MTH</td>
</tr>
<tr>
<td>Hebrew (Foreign Languages)</td>
<td>MUS</td>
</tr>
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<td>Health Education (Education)</td>
<td>NUR</td>
</tr>
<tr>
<td>History</td>
<td>OCT</td>
</tr>
<tr>
<td>Italian (Foreign Languages)</td>
<td>PEB</td>
</tr>
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<td>PHI</td>
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<td>PHY</td>
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<td>TAR</td>
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<td>WSP</td>
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<td>Zoology (Biology)</td>
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**COURSE DESCRIPTIONS 135**
ACCOUNTING (ACC)


ACC 2001 (ACC 201) ELEMENTARY ACCOUNTING I (3)
Study of basic accounting principles including the recording and reporting of financial activity. The preparation and interpretation of financial statements.

ACC 2021 (ACC 202) ELEMENTARY ACCOUNTING II (3)
PR: ACC 201. Accounting theory and practices for various equity structures.

ACC 3301 (ACC 300) ACCOUNTING FOR MANAGEMENT CONTROL (3)
PR: ACC 202. Study of accounting from user's point of view. Includes measurement theory, use of financial statements, and accounting measurement in planning and control.

ACC 3101 (ACC 301) INTERMEDIATE ACCOUNTING I (4)
PR: ACC 300 or concurrent registration in ACC 300. Measurement theory and methodology underlying income measurement and reporting of financial position. The study of cash, time value analysis, receivables, and inventories.

ACC 3121 (ACC 302) INTERMEDIATE ACCOUNTING II (4)
PR: ACC 301. Continuation of theory and principles underlying financial statements, current and long term liabilities, plant and equipment, investments, intangible, leases and pensions, and owners' equity.

ACC 3141 (ACC 303) INTERMEDIATE ACCOUNTING III (3)
PR: ACC 302. Required for Accounting majors. Continuation of theory and principles underlying financial statements, earnings per share, income tax allocation, price-level changes, accounting changes, statements from incomplete records, statements of change in financial position and contemporary accounting issues.

ACC 4201 (ACC 401) ADVANCED ACCOUNTING (3)
PR: ACC 302; MTH 211 or College Algebra. Quantitative application in accounting, partnerships, governmental accounting and price-level changes.

ACC 4221 (ACC 402) CONSOLIDATED FINANCIAL STATEMENTS (3)
PR: ACC 302. Accounting for home office and branch operations and business combinations.

ACC 4730 (ACC 405) ACCOUNTING INFORMATION SYSTEMS (4)
PR: ACC 302, GBA 333. General systems theory, total systems concept, internal control problems, and computer based accounting systems.

ACC 4501 (ACC 411) FEDERAL TAXES (4)
PR: ACC 202. An introduction to the federal income tax structure. Use of tax services and the concept of taxable income primarily applicable to individuals.

ACC 4521 (ACC 412) FEDERAL TAXES (3)
PR: ACC 411. Continued study of the federal income tax structure. Special topics and the concept of taxable income as it applies primarily to business enterprises.

ACC 4401 (ACC 421) COST ACCOUNTING AND CONTROL I (4)
PR: FIN 301, ECN 331. Deals with relevant costs for decision making; standards and job order costing, flexible budgeting, direct and absorption costing, regression analysis, and decision models.

ACC 4421 (ACC 422) COST ACCOUNTING AND CONTROL II (3)
PR: ACC 421. A continuation of ACC 421. The study of cost allocation, capital budgeting, inventory planning and control, joint products, process costing, performance measurement, and transfer pricing.

ACC 4601 (ACC 423) AUDITING (4)
PR: ACC 302 and ECN 331. Principles and procedures of internal and public auditing. The ethics, responsibilities, standards and reports of professional auditing.

ACC 4841 (ACC 425) BUDGETING (3)
PR: ACC 421. The development of budgets and their relation to expense and cost control, including the use of standard cost as a budgetary tool.

ACC 4914 (ACC 481) INDEPENDENT RESEARCH (1-5)
PR: CI. Individual study contract with instructor and department chairperson required. The research project will be mutually determined by the student and instructor. May be repeated up to 10 hours.

ACC 4801 (ACC 483) SELECTED TOPICS IN ACCOUNTING (1-5)
PR: CI. The course content will depend on student demand and instructor's interest.

(ACC 497) INDEPENDENT STUDY (1-4)
PR: CI. Specialized independent study determined by the students' needs and interests. May be repeated up to 8 credit hours. (S/JU only.)

ACC 5031 (ACC 501) ACCOUNTING CONCEPTS AND METHODOLOGY I (3)
A study of basic accounting principles including the recording of transactions and the preparation and interpretation of financial statements.

ACC 5041 (ACC 502) ACCOUNTING CONCEPTS AND METHODOLOGY II (3)
PR: ACC 501. A continuation of ACC 501. Consideration is given to budgeting and cost accounting. Emphasis is placed upon the analysis of financial condition and business operations through an understanding of accounting statements and reports.

ACC 6311 (ACC 601) MANAGERIAL ACCOUNTING AND CONTROL (3)
PR: Business Core or equivalent. A study of the relevancy and limitations of accounting measurement as a basis for business decision-making. Includes a review of fundamental accounting measurement theory and related tax implications.

ACC 6331 (ACC 602) MANAGERIAL ACCOUNTING AND CONTROL (3)
PR: Business Core and CI. The relevancy and limitation of cost information in business decision-making. Emphasis is oriented towards the role of cost accounting measurements in; (1) planning and controlling current operations; (2) special decisions and long-range planning; (3) inventory valuation and income determination.

ACC 6811 (ACC 605) DEVELOPMENT OF ACCOUNTING THOUGHT (3)
PR: 24 quarter hours in accounting or CI. A study and evaluation of the development and evolution of current accounting theory and measurement concepts. The definition of accounting objectives and goals and the development of measurement models.

ACC 6802 (ACC 606) CONTEMPORARY ACCOUNTING THOUGHT (3)
PR: ACC 605 or CI. Concentrated study of current problems areas in the field of accountancy.

The first number is the State Common Course Number
AFRO-AMERICAN STUDIES (AFA)

African culture and civilization on the growth and development of world cultures. Emphasis on the extent to which African culture has enriched the development of mankind, the cultural significance of African voyages and migrations to Asia, Europe and the Americas, and the historical quest for racial and continental pan-Africanism including Garveyism.

CPO 4202 (AFA 428) GOVERNMENT AND POLITICS OF AFRICA
Designed to provide the information and analytical tools necessary to interpret current Sub-Saharan African policies. Survey of political organizations in traditional African societies; politics under colonial rule; the struggle for independence, and post-independence politics.

AFA 4331 (AFA 431) SOCIAL INSTITUTIONS AND THE GHETTO
A study of social institutions as they relate to the American Black ghetto, with emphasis on social systems operating within and on the ghetto. (Formerly AFA 302.)

ECP 4143 (AFA 432) BLACK AMERICANS IN THE AMERICAN ECONOMIC PROCESS
Brief economic history of Black America emphasizing the impact of racial discrimination and evaluating proposals for improvement as they apply to Black Americans and other minority groups. (Formerly AFA 310.)

INR 4254 (AFA 438) AFRICA IN WORLD POLITICS
Study of international relations in the new Africa including the relations of the new states with the major world powers and their role in the United Nations.

PHM 4120 (AFA 440) CONTEMPORARY BLACK PHILOSOPHY
Major themes and participants in the Black liberation movement since 1900 (Formerly AFA 410).

CPO 4254 (AFA 442) GOVERNMENT AND POLITICS OF WEST AFRICA
In depth study of government, political systems and processes in West Africa including political developments, ideologies, problems and prospects of political and economic development and military regimes in the area.

CPO 4244 (AFA 443) GOVERNMENT AND POLITICS OF EAST, CENTRAL AND SOUTHERN AFRICA
In depth study of political developments, ideologies and modernization in East, Central and Southern Africa including race relations and white minority rule and Portuguese colonialism in Southern Africa.
AFS 4321 (AFA 444) EDUCATIONAL DEVELOPMENT IN THE AFRICAN WORLD (4)
An examination of educational systems and experiences of African peoples’ cultural past and needs for their future. In tracing the development of education in the African world, close attention will be paid to changing structures and functions of education as manifestations of governmental needs and desires. Similarities and contrasts of African and Afro-American educational patterns will be explored.

AFS 4910 (AFA 481) RESEARCH AND FIELD STUDIES (1-4)
A course linking the study pursued by the student with research and work projects in the Tampa Black community.

AFS 4931 (AFA 483) SELECTED TOPICS IN AFRO-AMERICAN STUDIES (1-4)
Topics offered are selected to reflect student needs and faculty interests. In depth study in such areas as the Black Student and the American Educational Process; the Black Experience in the Americas; European Expansion in Africa to 19th century; Contemporary Economic Problems in Africa.

THE first number is the State Common Course Number

AFS 4150 (AFA 484) AFRICA AND THE UNITED STATES (4)
A consideration of the nature and character of African cultural survivals in America including an examination of the historical and current political, economic, and cultural relations between the United States and Africa.

AFS 4900 (AFA 485) DIRECTED READINGS (2-4)
Independent readings in a particular area of Afro-American Studies, selected by student and instructor.

AFS 4936 (AFA 491) SENIOR SEMINAR (4)
In-depth study of a particular topic in the area of Afro-American Studies. Individual research by students required.

AFS 4419 (AFA 499) SEMINAR IN TEACHING BLACK STUDIES (4)
An examination of instructional media, resources and approaches relevant to the study and teaching of the black experience.

AGING STUDIES (AGE)


GEY 3000 (AGE 301) INTRODUCTION TO GERONTOLOGY (4)
This course is designed to be an introduction to the study of aging. The aging process is viewed from a multi-disciplinary perspective including the biological, psychological, and sociological aspects of aging.

GEY 3200 (AGE 315) APPLIED GERONTOLOGY (PR: CI) (4)
This course is designed to provide an integration of empirical data in the study of aging with practical experience in working with older people. Students will spend time actually working with older people in an agency or institutional setting and then will use experiences in conjunction with other available data to gain perspective in this field.

GEY 3100 (AGE 325) CULTURE, SOCIETY AND AGING (4)
This course is designed to allow the student to consider aging within the context of culture and society. Emphasis will be given to cultural attitudes toward aging in the U.S. and to implications of cultural attitudes for human behavior.

GEY 4930 (AGE 405) SEMINAR IN SELECTED TOPICS IN SOCIAL GERONTOLOGY (PR: CI) (3)
This course will provide upper level students with a seminar experience in discussing topics of interest and social relevance in the field of aging. Each student will be required to prepare a seminar paper and present it.

GEY 4900 (AGE 485) DIRECTED READINGS (PR: CI) (1-3)
A reading program with topics in gerontology conducted under the supervision of a faculty member.

GEY 5600 (AGE 501) PHYSICAL CHANGE AND AGING (PR: CI) (4)
Lectures and discussion concerned with normal functioning of major organ systems of the body, age-related changes, and implications for behavior.

GEY 5610 (AGE 502) PSYCHOLOGY OF AGING (PR: CI) (4)
Consideration of basic psychological processes as related to the aging process, changes in functioning and perceptual motor and cognitive-areas from the developmental perspective.

GEY 5620 (AGE 503) SOCIOLOGICAL ASPECTS OF AGING (PR: CI) (4)
Examines, within a sociological frame of reference, the inter-relationships between the aged (or aging) and the structure and function of the social system and its major institutionalized subsystems.

GEY 5350 (AGE 504) AGING AND PERSONALITY (PR: CI) (4)
An introduction to personality theory and concepts of adjustment with an overview of counseling techniques and rehabilitative efforts with the aged.

GEY 5630 (AGE 507) ECONOMICS AND AGING (PR: CI) (4)
A study of the basic processes of macroeconomic thought in the modern mixed economy and what influences these processes have on the subject of aging. The course will include discussions on economic issues pertinent to aging such as income maintenance, problems, theories of consumption and income, and labor force problems.

GEY 5250 (AGE 509) LEISURE FOR THE AGING (PR: CI) (4)
This seminar consists of general data and observations on trends and research in the leisure field, directed theoretical analysis of these studies as they pertain to the elderly and contact with progress by visits, interviews, and reports.

GEY 5642 (AGE 530) PERSPECTIVES ON DEATH AND DYING (PR: CI) (4)
An examination of man’s attempt to understand the meaning of death, and of his ways of meeting the personal and social crises which death presents. Study of the various psychological, medical, legal, and religious problems caused by dying and death, and of how individuals and groups have responded in the past and present. Emphasis on challenging and assisting the student to develop an objective and creative view of death and loss as it relates to the end of human life.

GEY 5901 (AGE 585) DIRECTED READINGS (1-3)
A reading program with topics in gerontology conducted under the supervision of a faculty member.

GEY 6325 (AGE 601) SOCIAL POLICY AND PLANNING FOR GERONTOLOGISTS (PR: CI) (4)
This course is intended to enable graduates to be more knowledgeable and hence more effective practitioners in the processes of social policy development and social planning. It is designed to provide an empirical and analytical base for understanding the major issues and trends involved in existing and proposed programs and services in the field of aging at local, state, and federal levels of service planning and provision.

GEY 6540 (AGE 663) SOCIAL RESEARCH METHODS APPLIED TO GERONTOLOGY (PR: CI) (4)
Systematic study of the methods and techniques employed in social, psychological, and health studies of population groups. Directed toward the consumers of research find-
ings — persons whose positions call for the ability to interpret, evaluate, and apply the findings produced by others.

GEY 6390 (AGE 605) INTERPERSONAL RELATIONS PRACTICUM
PR: Cl. A practicum involving students in group and individual settings in interaction with older persons. Content will include implications from interviewing, counseling, and current conceptions of personality in the aged.

GEY 6500 (AGE 606) INSTITUTIONAL ADMINISTRATION
PR: Cl. This course deals with the management problems and practices in the administration of institutions in the field of aging. Consideration is given to the economics of aging, federal and state legislation, the management of people, and fiscal management.

GEY 6510 (AGE 608) HUMAN RELATIONS IN ORGANIZATIONS
PR: Cl. An analytical view of the modern human relations movement with stress on development since the 1930's. Incorporates the philosophy of the behavioral sciences and alternative theories and relates them to the management process.

GEY 6460 (AGE 610) ADMINISTRATIVE APPLICATIONS OF DEMOGRAPHY
PR: Cl. Acquaints the student with various sources of demographic data and its use. Emphasis is placed upon applicability in program planning and student experience in locating, tabulating, and interpreting data from selected publications.

GEY 6910 (AGE 611) PROJECTS IN AGING I
PR: Cl. In-depth study of special topics with the objective of identifying problems for research and developing research proposals.

GEY 6910 (AGE 612) PROJECTS IN AGING II
PR: AGE 611 and Cl. A continuation of AGE 611.

GEY 6930 (AGE 690, 691, 692, 693) SEMINAR IN SOCIAL GERONTOLOGY
PR: Cl. Designed to give the graduate student an opportunity to integrate concepts within the field of gerontology and relate these to other fields of study. Guest lecturers from a variety of disciplines participate in the seminar. (S/U only.)

GEY 6940 (AGE 696) FIELD PLACEMENT
PR: Cl. Internship in an agency or setting. An assignment to an agency or organization engaged in planning or administering programs for older people or in providing direct services to older people. (S/U only.) (Formerly AGE 695.)

GEY 6907 (AGE 697) INDEPENDENT STUDY
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

AMERICAN STUDIES (AMS)


AMS 2363 (AMS 201) ISSUES IN AMERICAN CIVILIZATION
Through lecture and demonstration an examination of such topics as natural environment and the quality of life, architecture and American society, leisure and technology, jazz music, the role of higher education in America, the American success myth and the status of the arts in America.

AMS 3001 (AMS 301) INTRODUCTION TO AMERICAN CIVILIZATION
Introduction to major aspects of American life between 1898 and 1914. Should be taken the first term a student becomes an American Studies major. Elective for non-majors.

AMS 3201 (AMS 311) THE COLONIAL PERIOD
Puritan heritage: The pattern of American culture as revealed through an examination of selected writings and pertinent slides and recordings dealing with the art, architecture and music of the period. Elective for non-majors.

AMS 3201 (AMS 312) THE AGRARIAN MYTH
Frontier heritage: The pattern of American culture as revealed through an examination of selected writings and other pertinent materials dealing with American faith and the American frontier environment (the land, city, machine). Elective for non-majors.

AMS 3230 (AMS 313) AMERICA DURING THE TWENTIES AND THIRTIES
Heritage of the nineteen twenties and thirties: selected interdisciplinary materials are used to examine the relationships among regionalism, nationalism and internationalism during the twenties and thirties. Emphasis is placed on the measure of cultural nationalism attained by the United States during this period. Elective for non-majors.

AMS 3302 (AMS 321) ARCHITECTURE AND THE AMERICAN ENVIRONMENT
By means of slides, lectures and discussion the course examines 350 years of American architectural history. Architectural styles, aesthetics and the relation between a building and its social environment are stressed.

AMS 3303 (AMS 331) THE AMERICANIZATION OF ENGLISH
An overview of American attitudes toward the English language from colonization to the present. Among the topics discussed are: the American mania for correctness, the influence of the school marm, place and proper names and language prudery.

AMS 3930 (AMS 383) SELECTED TOPICS IN AMERICAN STUDIES
Offerings include The American Success Myth, Cultural Darwinism in America, America Through Foreign Eyes, Contemporary Topics in American Studies, Nineteenth and Twentieth Century American Communes.

AMS 4910 (AMS 481) INDIVIDUAL RESEARCH
The content of the course will be governed by student demand and instructor's interest. Instructor's approval required prior to registration.

AMS 4930 (AMS 483) SELECTED TOPICS IN AMERICAN STUDIES
Offerings include American Painting: its social implications, Technology in the Twentieth Century America, American Environmental Problems, Popular Culture in America.

AMS 4935 (AMS 491) SENIOR SEMINAR IN AMERICAN STUDIES
PR: Senior in American Studies or CI.

AMS 4935 (AMS 492) SENIOR SEMINAR IN AMERICAN STUDIES
PR: AMS 491.

AMS 4935 (AMS 493) SENIOR SEMINAR IN AMERICAN STUDIES
PR: AMS 491, AMS 492.

ANCIENT STUDIES (ANC)—see Religious Studies
ANTHROPOLOGY (ANT)


ANT 2000 (ANT 201) INTRODUCTION TO ANTHROPOLOGY
A general survey of physical anthropology, archaeology, linguistics and cultural anthropology.

ANT 3515 (ANT 311) PHYSICAL ANTHROPOLOGY
PR: ANT 201 or CI. The comparative study of human physical variations and origins.

ANT 3100 (ANT 321) ARCHAEOLOGY
PR: ANT 201 or CI. The comparative study of past cultures and societies.

ANT 3410 (ANT 331) CULTURAL ANTHROPOLOGY
PR: ANT 201 or CI. The comparative study of cultures and societies.

ANT 3005 (ANT 371) THE ANTHROPOLOGICAL PERSPECTIVE
PR: ANT 201 or CI. Anthropological concepts relevant to contemporary life. Designed for non-anthropology majors. May not be counted for credit toward an anthropology major.

ANT 4674 (ANT 401) SELECTED TOPICS IN LINGUISTIC ANTHROPOLOGY
PR: Three of the core courses, or CI. A detailed study of current issues such as the relationship of language and culture, ethnographic semantics, or paralinguistic phenomena. May be repeated as topics vary.

ANT 4593 (ANT 411) SELECTED TOPICS IN PHYSICAL ANTHROPOLOGY
PR: ANT 201-311 or CI. A detailed study of current issues such as paleo-pathology, human races, or social biology. May be repeated as topics vary.

ANT 4193 (ANT 421) SELECTED TOPICS IN ARCHAEOLOGY
PR: ANT 201-321 or CI. A detailed study of current issues such as the development of civilization, regional chronologies, or historical archaeology. May be repeated as topics vary.

ANT 4493 (ANT 431) SELECTED TOPICS IN CULTURAL ANTHROPOLOGY
PR: ANT 201-331 or CI. A detailed study of current issues such as socio-cultural change, ethnopsychology, or social structure. May be repeated as topics vary.

ANT 4211 (ANT 441) REGIONAL ANTHROPOLOGY
PR: ANT 201-331 or CI. A survey of cultures and societies in a limited area or region. May be repeated as topics vary: (1) Indians of North America; (2) Cultures of Africa; (3) Cultures of the Pacific; (4) Cultures of Mesoamerica; (5) Cultures of the Middle East; (6) Specified areas such as Asia, Southeastern U.S. or Florida depending on current interest and staff.

ANT 4034 (ANT 461) HISTORY OF ANTHROPOLOGICAL THEORY
PR: Lin 301, ANT 311-321-331 or CI. Survey and analysis of the development of the theory and method.

ANT 4084 (ANT 471) METHODS IN ANTHROPOLOGY
PR: CI. Study and application of a selected field or laboratory method in anthropology. Prerequisites will depend on area of study and will be determined by consultation with instructor in advance of registration. May be repeated as topics vary: (1) Archaeological Field Methods; (2) Field Methods in Cultural Anthropology; (3) Laboratory Methods in Archaeology; (4) Laboratory Methods in Physical Anthropology; (5) Others as specified.
ANT 6447 (ANT 654) SELECTED TOPICS IN URBAN ANTHROPOLOGY (4)
PR: Three of the core courses, or CI. Current topical issues in urban anthropology. May be repeated up to 8 credit hours as topics vary. Open to non-majors.

ANT 6197 (ANT 657) SELECTED TOPICS IN PUBLIC ARCHAEOLOGY (4)
PR: Three of the core courses, or CI. Current topical issues in public archaeology. May be repeated up to 8 credit hours as topics vary. Open to non-majors.

ANT 6463 (ANT 661) REGIONAL PROBLEMS IN MEDICAL ANTHROPOLOGY (4)
PR: Three of the core courses, or CI. Contemporary problems in medical anthropology in the context of a specific region. May be repeated up to 8 credit hours as topics vary. Open to non-majors.

ART 6448 (ANT 664) REGIONAL PROBLEMS IN URBAN ANTHROPOLOGY (4)
PR: Three of the core courses, or CI. Contemporary problems in urban anthropology in the context of a specific region. May be repeated up to 8 credit hours as topics vary. Open to non-majors.

ANT 6198 (ANT 667) REGIONAL PROBLEMS IN PUBLIC ARCHAEOLOGY (4)
PR: Three of the core courses, or CI. Contemporary problems in archaeology in the context of a specific region. May be repeated up to 8 credit hours as topics vary. Open to non-majors.

ANT 6908 (ANT 681) DIRECTED RESEARCH (var.)
PR: GR. Master's level. Repeatable. (S/U only.)

ART 6908 (ANT 697) INDEPENDENT STUDY (var.)
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

ANT 6971 (ANT 699) THESIS: MASTER'S Repeatable. (S/U only.)

ART (ART)


ART 2202 (ART 201) VISUAL CONCEPTS I (4)
Studio problems supplemented by reading and discussion. Consideration of spatial organization of the two-dimensional surface.

ART 2203 (ART 202) VISUAL CONCEPTS II (4)
Studio programs supplemented by reading and discussion. Consideration of three-dimensional organization of space and mass.

ART 3002 (ART 301) BASIC SEMINAR (2)
Philosophical dimensions of art. Discussion of purposes of art and the relationship of art to life.

ART 3301 (ART 304) DRAWING I (4)
PR: ART 201 and ART 301. Drawing as a means of formal organization. Introduction to intermediate drawing methods and media.

ART 3000 (ART 310) INTRODUCTION TO ART (3)
An introductory course for the student who does not intend to major in art. (S/U only.)

ART 3510 (ART 311) PAINTING I (4)
PR: ART 201, 301, 304. Intermediate problems in painting with an emphasis on the exploration of methods and media and the development of individual concepts.

ART 3701 (ART 321) SCULPTURE I (4)
PR: ART 202 and ART 301. Intermediate problems in sculpture with emphasis on the exploration of materials and development of individual concepts.

ART 3110 (ART 331) CERAMICS I (4)
PR: ART 202 and ART 301. Intermediate problems in ceramics with an emphasis on the exploration of materials and development of individual concepts.

ART 3400 (ART 340) GRAPHICS I (4)
PR: ART 201, 301, 304. Introduction to the graphics media: Intaglio, Lithography, Silkscreen.

ART 3600 (ART 361) PHOTOGRAPHY I (4)
PR: ART 201 and ART 301. Intermediate problems in photography with emphasis on the exploration of materials and development of individual concepts.

ART 3630 (ART 365) CINEMATOGRAPHY I (4)
PR: ART 201 and ART 301. Intermediate problems in cinematography with emphasis on the exploration of materials and media and development of individual concepts.

ART 3640 (ART 369) CINEMATOGRAPHY II (4)
PR: ART 301. Continued problems in cinematography. May be repeated.

ART 4200 (ART 421) SCULPTURE II (4)

ART 4111 (ART 431) CERAMICS II (4)
PR: ART 331. Continued problems in ceramics. May be repeated.

ART 4421 (ART 441) LITHOGRAPHY II (4)

ART 4471 (ART 442) INTAGLIO II (4)

ART 4431 (ART 443) SILKSCREEN II (4)

ART 4935 (ART 453) ART SENIOR SEMINAR (3)
PR: Senior Status. To aid majors to understand, appraise and perfect their own art and technique through critical and aesthetic judgments of their colleagues. Discussion and critical evaluation.

ART 4601 (ART 461) PHOTOGRAPHY II (4)
PR: ART 361. Continued problems in photography. May be repeated.

ART 4743 (ART 464) INTRODUCTION TO THE PERSONAL FILM (4)
PR: ART 365. Comparison of philosophical and technical distinctions between the personal film and theatrical or commercial release.

ART 4631 (ART 465) CINEMATOGRAPHY II (4)
PR: ART 365. Continued problems in cinematography. May be repeated.
ARH 5746 (ART 466) ANATOMY OF THE COLLABORATIVE FILM
PR: ART 465. Analysis of aesthetic and other selected aspects of film produced through collaborative efforts. May be repeated. (Formerly ART 566.)

ART 463 (ART 467) SOUND TECHNIQUES
PR: ART 365. The recording and editing of sound for film. Collaboration with other departments, particularly Music and Theatre, is encouraged. To be taken concurrently with ART 465 or ART 565 whenever possible.

ARH 5790 (ART 468) SELECTED TOPICS IN THE HISTORY OF FILM
In depth investigation of a selected period, development or school in the history of film as art. May be repeated. (Formerly ART 568.)

ARH 4100 (ART 470) PREHISTORIC AND ANCIENT ART
A comprehensive study of Paleolithic, Neolithic, Egyptian, Assyrian and Mesopotamian painting, sculpture and architecture.

ARH 4170 (ART 471) GREEK AND ROMAN ART
A comprehensive study of Aegean, Mycenaean, Etruscan, Greek and Roman painting, sculpture and architecture.

ARH 4090 (ART 472) MEDIEVAL ART
A comprehensive study of early Christian, Byzantine and Medieval painting, sculpture, architecture and manuscript illumination.

ARH 4301 (ART 473) RENAISSANCE ART
A comprehensive study of Renaissance and Mannerist painting, sculpture and architecture in Italy and Northern Europe

ARH 4350 (ART 474) BAROQUE AND ROCOCO ART
A comprehensive study of the painting, sculpture and architecture in France, Italy, Spain and the Netherlands in the seventeenth and early eighteenth centuries.

ARH 4430 (ART 475) NINETEENTH CENTURY ART
A comprehensive study of nineteenth century painting, sculpture and architecture in France and England.

ARH 4450 (ART 476) TWENTIETH CENTURY ART
A comprehensive study of painting, sculpture and architecture from Cezanne to the present in Europe and the United States. Required of all art majors.

ARH 4530 (ART 477) ORIENTAL ART
An introduction to concepts of the arts of China, Japan, and other Far Eastern countries.

ART 4905 (ART 481) DIRECTED STUDY
PR: CC. Independent studies in the various areas of Visual Arts. Course of study and credits must be assigned prior to registration. May be repeated.

ART 4900 (ART 485) DIRECTED READING
PR: CI and CC. A course of reading and study in an area of special concern governed by student demand, instructor interest, and/or departmental requirements. Selection of study area and materials for the course must be agreed upon and appropriate credit must be assigned prior to registration. A contract with all necessary signatures is required for registration. May be repeated for credit for different study areas only.

ART 4930 (ART 491) IDEA SEMINAR
PR: ART 301. Readings, discussion. Subjects will change each quarter, determined by mutual student and faculty interests. May be repeated.

ARH 4796 (ART 498) CRITICAL STUDIES IN ART HISTORY
PR: CI. Specialized intensive studies in art history. Specific subject matter varies. To be announced at each course offering. May be repeated for different topics only. (Formerly ART 570.)

The first number is the State Common Course Number.

ARH 4937 (ART 499) SEMINAR IN THE HISTORY OF ART HISTORY
PR: Four courses in Art History at the 400 level, CI. An examination of the origins of Art History as a discipline and the changing nature of Art History from Vasari to the present. (Formerly ART 573.)

Admission to all 500-level studio courses by Consent of Instructor.

ART 5340 (ART 501) DRAWING

ART 5352 (ART 511) PAINTING
PR: ART 411. Advanced problems in the various painting techniques. Emphasis on individual creative expression. May be repeated.

ART 5730 (ART 521) SCULPTURE
PR: ART 421. Advanced problems in the various techniques of sculpture. Emphasis on individual creative expression. May be repeated.

ART 5125 (ART 531) CERAMICS
PR: ART 431. Advanced problems in the various ceramic techniques, including throw and glaze calculation. May be repeated.

ART 5422 (ART 541) LITHOGRAPHY
PR: ART 441. Advanced problems in various lithographic techniques. Emphasis on individual creative expression. May be repeated.

ART 5472 (ART 542.) INTAGLIO
PR: ART 442. Investigations into more complex intaglio processes including photoengraving and color printing procedures. Emphasis on personal conceptual development in graphic media. May be repeated.

ART 5432 (ART 543) SILKSCREEN
PR: ART 443. Advanced problems in the various silkscreen techniques. Emphasis on individual creative expression. May be repeated.

ART 5604 (ART 561) PHOTOGRAPHY
PR: CI. Advanced work in photography and related media leading to development of personal/expressive statements. May be repeated.

ART 5642 (ART 565) CINEMATOGRAPHY
PR: ART 465. Advanced studio work using black and white, color and sound as technical and aesthetic factors in visual, artistic productions. May be repeated.

ART 5910 (ART 581) RESEARCH
PR: CC. May be repeated.

ART 5936 (ART 591) STUDIO TECHNIQUES: SELECTED PROJECTS
PR: ART 201, ART 202, ART 301, the topic-technique-related course, and CI. Concentration in specialized technical data and process. May be repeated for credit for different topics only.

ART 6341 (ART 601) DRAWING
PR: CI. May be repeated.

ART 6580 (ART 611) PAINTING
PR: CI. May be repeated.

ART 6731 (ART 621) SCULPTURE
PR: CI. May be repeated.

ART 6126 (ART 631) CERAMICS
PR: CI. May be repeated.

ART 6423 (ART 641) LITHOGRAPHY
PR: CI. May be repeated.

ART 6473 (ART 642) INTAGLIO
PR: CI. May be repeated.
ART 6450 (ART 643) SILKSCREEN (4)
FR: CI. May be repeated.

ART 6620 (ART 661) PHOTOGRAPHY (4)
FR: CI. May be repeated.

ART 6645 (ART 665) CINEMATOGRAPHY (4)
FR: CI. May be repeated.

ART 6936 (ART 682) GRADUATE SEMINAR (2)

ART 6911 (ART 681) DIRECTED RESEARCH (var.)
FR: CI. May be repeated.

ART 6855 (ART 670) ART HISTORY (4)
FR: CI. May be repeated.

ART 6911 (ART 681) DIRECTED RESEARCH (var.)
FR: GR. Master’s level. Repeatable. (S/U only.)

ART 6936 (ART 682) GRADUATE SEMINAR (2)
FR: CI. Advanced course in theoretical and conceptual foundations of the visual arts. The specific structure and content to be determined by the instructor. Must be repeated for a minimum of four hours.

ART 6940 (ART 683) SELECTED TOPICS IN ART (1-6)
FR: Graduate Standing and CI. A variable credit depending upon the scope and magnitude of the work agreed to by the student and the responsible member of the faculty. May be repeated.

ART 6911 (ART 684) GRADUATE STUDIO THESIS DOCUMENTATION (2)
PR: CI. An advanced seminar focused on the problems of documenting in verbal form the development of a body of work in the visual arts.

ART 6937 (ART 694) GRADUATE INSTRUCTION METHODS (1-5)
Special course to be used primarily for the training of graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

(ART 697) INDEPENDENT STUDY (var.)
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

ART 6972 (ART 699) THESIS: MASTER’S (var.)
Repeatable. (S/U only.)

ASTRONOMY (AST)


AST 2005 (AST 203) DESCRIPTIVE ASTRONOMY I (5)
History of astronomy, celestial phenomena, timekeeping, astronomical instruments, properties of light, contents and elementary dynamics of the solar system. Descriptive approach with a minimum of mathematics. No credit for astronomy majors.

AST 2006 (AST 204) DESCRIPTIVE ASTRONOMY II (5)
Distances, fundamental properties and evolution of stars; the sun as a star, unusual stars (exploding stars, pulsating stars, etc.); the nature of the Galaxy and other galaxies, cosmology. Descriptive approach with a minimum of mathematics. No credit for astronomy majors.

AST 2032 (AST 271) ILLUSTRATIVE ASTRONOMY (4)
Constellations, use of small telescopes, etc., apparent motions of celestial objects, comets and meteors, seasons and weather. Current events in the space program. Planetarium and open sky demonstrations. Lecture-laboratory. No credit for astronomy majors.

AST 3015 (AST 301) INTRODUCTORY ASTRONOMY I (4)
CR: MTH 212 or MTH 302 or CI, AST 311. Aspects of sky, coordinate systems, timekeeping, elementary mechanics of planetary motion, nature and properties of light, eclipses, instrumentation. A quantitative first course for science and math majors.

AST 3016 (AST 302) INTRODUCTORY ASTRONOMY II (4)
CR: MTH 212 or MTH 302. Determination of star positions, distance and motions; solar systems, qualitative spectroscopy and spectral classification of stars; binary stars and clusters, variable stars, photometry, telescopes and instrumentation.

AST 3017 (AST 303) INTRODUCTORY ASTRONOMY III (4)
CR: MTH 302 or MTH 212 or CI. Introduction to basic astrophysics and stellar structure and evolution; interstellar medium, nebulae and pulsars; nature and dynamics of the Milky Way and other galaxies, quasars and cosmology. A quantitative introduction to stellar and galactic astronomy for science and math majors.

AST 3022 (AST 311) ASTRONOMICAL LABORATORY I (1)
CR: AST 301, required of majors, open to non-majors. Exercises in connection with AST 301. Use of small telescopes, introduction to the use of small calculators.

AST 3023 (AST 312) ASTRONOMICAL LABORATORY II (2)
Required of majors. Introduction to astronomical instruments and observing practice, and actual observations at the telescope. Use of auxiliary instruments and reduction of observations.

AST 3652 (AST 313) NAVIGATION (3)
PR: Some knowledge of geometry, algebra and trigonometry. Timekeeping, use of sextant, constellations, navigation with minimum equipment, some spherical astronomy.

AST 3043 (AST 351) HISTORY OF THE SCIENCE OF ASTRONOMY (5)
To familiarize seriously interested students with the history of Astronomy and the influence of this discipline on the development of human knowledge.

AST 3033 (AST 371) CONTEMPORARY THINKING IN ASTRONOMY (5)
PR: Junior or senior standing or CI. Current concepts of astronomy and space science of general interest; background facts; artificial satellites, space probes; surface conditions of planets and evolution of the star; cosmology. No credit for astronomy majors or mathematics majors.

AST 4622 (AST 413) GEOMETRY AND KINEMATICS OF THE UNIVERSE (4)
PR: CI. Astronomical coordinate systems and their mutual relationships, time.

AST 4165 (AST 414) ANALYTICAL TECHNIQUES IN ASTRONOMY (5)
PR: Calculus and analytic geometry, AST 301, AST 302, AST 303. Newton’s and Kepler’s laws, two body problem, elementary perturbation theory, rigid body dynamics, tides, numerical analysis, planetary interiors and atmospheres, solar system cosmogony.

AST 4213 (AST 443) STELLAR ASTROPHYSICS (5)
PR: AST 302 or CI, MTH 303. The physical characteristics of stars, their measurement, and their distribution. Analysis of stellar radiation. Double stars, associations, clusters, galaxies.

AST 4910 (AST 481) UNDERGRADUATE RESEARCH (1-6)
PR: Senior or advanced junior standing and CI. Participation in professional research with a view to publication of results. May be repeated. (S/U only.)

AST 4933 (AST 491) ASTRONOMY SEMINAR (1)
PR: Senior or advanced junior standing. May be repeated twice. (S/U only.)
AST 5506 (AST 521) INTRODUCTION TO CELESTIAL MECHANICS
PR: AST 302, or CI, MTH 302 and some knowledge of differential equations, or CI. The two-body problem, artificial satellites, elements of perturbation theory.

AST 5274 (AST 522) BINARY STARS
PR: AST 302, or CI, MTH 302 or CI. Principles used to find the properties of astrometric, eclipsing, spectroscopic and visual binaries.

AST 5215 (AST 533) STELLAR CONSTITUTION AND EVOLUTION
PR: AST 443 or CI, PHY 405. CR: MTH 405. Internal constitution of stars, physics of gas spheres, energy generation in stars, theories of stellar evolution.

ASI 5205 (AST 536) INTRODUCTION TO RADIO ASTRONOMY

AST 5932 (AST 583) SELECTED TOPICS IN ASTRONOMY
PR: Senior or advanced junior standing or CI. Intensive coverage of special topics to suit needs of advanced students.

AST 6605 (AST 611) POSITIONAL ASTRONOMY
PR: AST 413 or CI. The accurate determination of relative and absolute star positions, and related problems.

AST 6507 (AST 621) CELESTIAL MECHANICS
PR: AST 521 or CI. Planetary theory, lunar theory, Hamiltonian systems, canonical variables, restricted three-body problem, artificial satellite theory, equilibrium and resonance. Certain topics will be emphasized according to the needs of the students.

The first number is the State Common Course Number

AST 6216 (AST 631) STELLAR ATMOSPHERES
PR: AST 443 and MTH 406 or CI. Basic observational data. Thermodynamics of the gaseous state. Elements or spectroscopy. The transfer equation (continuum and lines). The problem of calculation of atmospheres.

ASI 6125 (AST 661) PHOTO METRY
PR: AST 302 or CI. MTH 305. Theoretical, observational and instrumental concepts required in astronomical photometry.

AST 6915 (AST 681) DIRECTED RESEARCH
PR: CI.

AST 6931 (AST 683) SELECTED TOPICS IN ASTRONOMY
PR: CI.

AST 6935 (AST 691) GRADUATE SEMINAR
PR: CI. May be repeated. (S/U only.)

AST 6945 (AST 694) GRADUATE INSTRUCTION METHODS
Special course to be used primarily for the training of graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

AST 6916 (AST 695) GRADUATE RESEARCH METHODS
Special course to be used primarily for the training of graduate research assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

AST 6907 (AST 697) INDEPENDENT STUDY
Independent study in which students must have a contract with an instructor. Repeatable. (S/U only.)

AST 6971 (AST 699) THESIS: MASTER'S
Repeatable. (S/U only.)

BIOL OGY

(BIO, BOT, MIC, ZOO)


Biology (BIO)

BSC 2010 (BIO 201) FUNDAMENTALS OF BIOLOGY I
A brief overview of living organisms, respiration, photosynthesis, cell structure, and specialization. Lec.-Lab. Qtr. I, II.

BSC 2011 (BIO 202) FUNDAMENTALS OF BIOLOGY II
Cell division, genetics, reproduction and development, physiology. Lec.-Lab Qtr. II, III.

BSC 2012 (BIO 203) FUNDAMENTALS OF BIOLOGY III
Neurophysiology, behavior patterns, genetics, and evolution; ecology. Lec-Disc. Qtr. I, III.

APB 2140 (BIO 205) FOODS AND DRUGS
The application of basic biological principles to relevant problems and topics in nutrition and drugs through the consideration of scientific and popular literature. For non-majors.

APB 2160 (BIO 206) GENES AND PEOPLE
The application of basic biological principles of human heredity to relevant problems and topics through the consideration of scientific and popular literature. For non-majors.

APB 2120 (BIO 207) ENVIRONMENT
The application of basic principles of ecology to relevant problems and topics relating to man's environmental interactions through consideration of scientific and popular literature. For non-majors.

APB 2550 (BIO 255) SEX, REPRODUCTION AND POPULATION
The application of basic biological principles from subject areas to relevant problems and topics through the consideration of scientific and popular literature. For non-majors. Qtr. I-IV.

PCB 2167 (BIO 256) EVOLUTION
The application of basic principles of evolution with an emphasis upon man through the consideration of scientific and popular literature. For non-majors.

BSC 2930 (BIO 271) TOPICS IN BIOLOGY
Lectures, individual reading, movies, classroom discussion and evaluation of selected biological topics reflecting biological principles. For non-majors.

PCB 3183 (BIO 315) HISTOLOGICAL TECHNIQUES
PR: BIO 201-203. Theory and practice of tissue fixation, embedding, sectioning, and staining; chromosomal squash preparations; nuclear isolation techniques; photomicrography. Lec.-Lab.

PCB 3060 (BIO 331) GENERAL GENETICS
PR: BIO 201-203. Introduction to genetics including the funda-
mental concepts of Mendelian, molecular and population genetics. Lec. Qtr. I, II, III.

**APB 3120 (BIO 345) MAN’S BIOLOGICAL ENVIRONMENT (4)**
PR: BIO 201-203. A biological consideration of man's deteriorating relationship with his environment. Emphasis on pollution, pesticides and population.

**APB 3150 (BIO 372) MAN, MICROBE AND MOLECULE (4)**
Origin of life, control of diseases, environmental quality and the use of microorganisms as tools in searching for molecular explanations of living phenomena. For non-majors.

**PCB 4103 (BIO 401) CELL BIOLOGY I (5)**
PR: CHM 333, 334, and BIO 331. A discussion of the concept and significance of the cell to biology; biological molecules and metabolic processes within the cell; cellular energy conversion systems; and control of cellular metabolism. Qtr. I, II.

**PCB 4104 (BIO 402) CELL BIOLOGY II (5)**
PR: BIO 401. A continuation of Cell Biology I. The structure and function of cells and their organelles; irritability and contraction; cell differentiation, growth, and integration of cellular activity. Qtr. II, III.

**BOT 4663 (BIO 412) INTRODUCTION TO TROPICAL BIOLOGY (5)**
PR: BIO 201-203. The tropical environment and its effect on plant and animal communities. Plant and animal interactions and man’s impact on the environment.

**PCB 4063 (BIO 431) EXPERIMENTAL GENETICS (4)**
PR: BIO 331 or CI. Experimental analysis of genetic systems. Lec.-Lab.: 2 hr. lec.; 2-3 hr. labs.

**PCB 4033 (BIO 445) PRINCIPLES OF ECOLOGY (4)**
PR: BIO 201-203. An introduction to the basic principles and concepts of ecology at the ecosystem, community, and population level of organization. Lec.-Disc.

**PCB 4674 (BIO 465) ORGANIC EVOLUTION (4)**
PR: BIO 331 or CI. An introduction to modern evolutionary theory. Lecture on population genetics, adaptations, speciation theory, phylogeny, human evolution and related areas.

**BSC 4910 (BIO 481) UNDERGRADUATE RESEARCH (1-6)**
PR: CI. Individual investigation with faculty supervision. (S/U only).

**BSC 4930 (BIO 483) SELECTED TOPICS IN BIOLOGY (1-4)**
PR: CI.

**BSC 4930 (BIO 491) SEMINAR IN BIOLOGY (1)**
PR: CI. Senior or advanced junior standing. May be repeated once. (S/U only).

**PCB 5115 (BIO 510) CYTOLOGY (4)**
PR: BIO 201-203. Survey of the structure and function of cytoplasmic and nuclear components of plant and animal cells. Lec.-Lab.

**PCB 5125 (BIO 515) SUBCELLULAR CYTOLOGY (4)**
PR: BIO 201-203. A review of biophysical techniques used in biology to include an introduction of X-ray diffraction, bright field, phase, ultra-violet, interference, and electron microscopy. The course will consist of three hours of lecture and one three-hour lab for demonstration of techniques. Lec.-Lab.

**PCB 5835 (BIO 522) NEUROPHYSIOLOGY (4)**

**PCB 5525 (BIO 532) MOLECULAR GENETICS (4)**
PR: BIO 331. Detailed examination of DNA, RNA and protein synthesis; the effects of mutations on proteins, cellular control; selected aspects of viral, bacterial, and fungal genetics. Lec.-Lab. Qtr. II.

**PSC 5615 (BIO 535) EVOLUTIONARY GENETICS (4)**
PR: BIO 331 or CI. Examination of factors such as mutation, migration, natural selection, and genetic drift which modify the genetic structure of populations.

**PCB 5235 (BIO 558) PRINCIPLES OF IMMUNOLOGY (4)**
PR: BIO 401 or CI. Course will emphasize the biological principles involved in the vertebrate immune response. It will present the homeostatic, defense, and detrimental aspects of the immune system in terms of basic cellular and molecular mechanisms. Techniques will be described to familiarize the student with the types of immunological tools available to the cellular and molecular biologist.

**BSC 5931 (BIO 583) SELECTED TOPICS IN BIOLOGY (1-4)**
PR: CI. Each topic is a course in directed study under supervision of a faculty member.

**BSC 6106 (BIO 601) HISTORY OF BIOLOGY (3)**
PR: CI. The historical development of biology with emphasis on the origin of important theories and principles.

**PCB 6566 (BIO 612) CHROMOSOME STRUCTURE AND CHEMISTRY (4)**
PR: BIO 510. Introduction to the molecular organization of the Eukaryotic chromosome.

**PCB 6176 (BIO 615) ULTRASTRUCTURE TECHNIQUES IN ELECTRON MICROSCOPY (6)**
PR: BIO 201-203, BIO 515 or CI. Discussion of theory and techniques in electron microscopy. Emphasis on preparation of biological specimens, electron microscopic optics and use of the electron microscope. Lec.-Lab.

**PCB 6456 (BIO 616) BIOMETRY (4)**
PR: MTH 211-223 or CI. An introduction to statistical procedures for research in the biological sciences. Experimental design, analysis of data and presentation of results are emphasized.

**PCB 6426 (BIO 636) POPULATION BIOLOGY (4)**
PR: BIO 535 and BIO 616 or CI. Introduction to the theory of population dynamics with emphasis on the genetic and ecological components of population growth, natural selection, and competition between species. Lec.

**PCB 6386 (BIO 641) TROPICAL ECOLOGY (4)**
PR: BIO 445. Graduate Standing or CI. A discussion of a series of related ecological topics to illustrate the features peculiar to the tropics.

**ZOO 6296 (BIO 651) MARINE PLANKTON SYSTEMATICS (4)**
(Also listed as MSC 651, q.v.).

**BSC 6912 (BIO 653) MARINE PLANKTON ECOLOGY (4)**
(Also listed as MSC 653, q.v.).

**BSC 6912 (BIO 681) DIRECTED RESEARCH (var.)**
PR: GR. Master’s level. Repeatable. (S/U only.)

**BSC 6932 (BIO 683) SELECTED TOPICS IN BIOLOGY (1-6)**
PR: CI.

**BSC 6935 (BIO 691) GRADUATE SEMINAR IN BIOLOGY (1)**
PR: CI. (S/U only.)

**BSC 6945 (BIO 694) GRADUATE INSTRUCTION METHODS (1-5)**
Special course to be used primarily for the training of graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

**BSC 6912 (BIO 695) GRADUATE RESEARCH METHODS (1-5)**
Special course to be used primarily for the training of graduate research assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

**BIO 697 INDEPENDENT STUDY (var.)**
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)
Biology-Botany (BOT)

BOT 3010 (BOT 300) INTRODUCTION TO BOTANY (5)
PR: BOT 201-203 or equivalent. Knowledge of basic biological principles will be assumed. A presentation of the fundamentals of plant life; structure and function of flowering plants; history of agriculture, plants and man; plant distribution and ecology; survey of major plant groups, algae, fungi, bryophytes, ferns, gymnosperms, and flowering plants.

BOT 3713 (BOT 311) SYSTEMATIC BOTANY (5)
PR: BOT 300. Identification and classification of the more interesting vascular plants of Florida; angiosperm evolution; principles of taxonomy. Conducted largely in the field.

APB 3100 (BOT 371) PLANTS AND MAN (4)
PR: Junior or Senior Standing or CI. The relation of plants to human history and contemporary life. Botanical and economic aspects of plants used as sources of foods, drugs, and other products of importance in everyday life. Origins of cultivated plants. For non-majors.

BOT 4353 (BOT 415) MORPHOLOGY OF VASCULAR PLANTS (5)
PR: BOT 300. An intensive survey of the morphology, evolution and taxonomy of the various groups of vascular plants, both living and extinct. The course will focus primarily on lower groups such as the fern and gymnosperms but will conclude with an analysis of the origins and general features of the Angiosperms.

BOT 4433 (BOT 417) MYCOLOGY (5)
PR: BOT 300 or CI. A survey of the fungi with emphasis on their taxonomy, morphology, physiology and economic importance. Lec.-Lab.

BOT 4223 (BOT 419) PLANT ANATOMY (5)
PR: BOT 300. Comparative studies of tissue and organ systems of fossil and present-day vascular plants. Functional and phylogenetic aspects stressed. Lec.-Lab.

BOT 4503 (BOT 423) PLANT PHYSIOLOGY (5)

BOT 4933 (BOT 491) SEMINAR IN BOTANY (1)
PR: Senior or advanced junior standing and CI. May be repeated once. (S/U only.)

BOT 5725 (BOT 511) TAXONOMY OF FLOWERING PLANTS (4)
PR: BOT 311 or CI. A phylogenetic study of Angiosperms; relationship of the principal orders and families, problems of nomenclature, identification of specimens, comparisons of recent systems of classification, dissection of representative flower types. Field trips and lab work. Lec.-Lab.

BOT 5495 (BOT 517) PHYSIOLOGY OF THE FUNGI (3)
PR: BOT 417 or CI. The biochemical, physiological and hormonal basis involved in morphogenesis and cellular control in fungi. Lec.

The first number is the State Common Course Number

BOT 5565 (BOT 521) PHYSIOLOGY OF PLANT GROWTH AND DEVELOPMENT (3)
PR: BOT 421, BIO 201-203 and CI. A study of plant development with emphasis of the role of light and growth hormones on the process of flowering, fruit set, ripening, and senescence.

BOT 5405 (BOT 543*) PHYCOLOGY (5)
PR: BOT 300 or CI. A detailed survey of the algae emphasizing both taxonomy and morphology of fresh and marine water forms; field and laboratory investigations, including individual projects. Lec.-Lab.

BOT 5605 (BOT 546*) PLANT ECOLOGY (4)
PR: BOT 300, BIO 445, or CI. Distribution and nature of vegetation in relation to climatic, physiographic, edaphic, and biotic factors; field investigations of subtropical Florida plant communities. Lec.-Lab.

BOT 5185 (BOT 547*) MARINE BOTANY (5)
PR: BOT 300, BIO 445, or CI. A field course in marine plants with emphasis on ecology and functional morphology. Field work will stress the ecological aspects of plants in a subtropical marine environment in Florida. Lec.-Lab.

BOT 5931 (BOT 583) SELECTED TOPICS IN BOTANY (1-4)
PR: CI. Each topic is a course in direct study under supervision of a faculty member.

BOT 6716 (BOT 611) BIOSYSTEMATICS (4)
PR: BOT 311 or equivalent. Application of cytolgy, ecology, genetics, biochemistry, and morphological analyses to the study of evolution and classification of species of higher plants. Lec.

BOT 6666 (BOT 612) BIOLOGY OF TROPICAL PLANTS (3)
PR: BIO 412. Special topics in the systematics, morphology, physiology, genetics, and ecology of tropical plants with consideration of habitat diversity that leads to rich floras. Lec.

BOT 6666 (BOT 613*) LABORATORY IN TROPICAL PLANTS (2)
PR: Must be taken concurrently with BOT 612. Extended field trip to some area of the New World Tropics to examine major types of vegetation and gain familiarity with field techniques; research problem development. Lab.

BOT 6516 (BOT 621) PLANT METABOLISM LECTURE (3)
PR: BOT 421, CHM 336 or CI. A study of plant metabolism with emphasis on the biosynthetic pathways and their regulation.

BOT 6516 (BOT 622) PLANT METABOLISM LABORATORY (4)
PR: BOT 421, CHM 336, or CI. An intensive exposure to the methods used in experimenting with plant material.

BOT 6636 (BOT 650) MARINE ALGAL ECOLOGY (3)
(Formerly BIO 650) (Also listed as MSC 650, q.v.). (Formerly BIO 650)

— (BOT 697) INDEPENDENT STUDY (var.)
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

BOT 6971 (BOT 699) THESIS: MASTER'S (var.)
Repeatable. (S/U only.)

Biology-Microbiology (MIC)

MCB 3010 (MIC 351) INTRODUCTION TO MICROBIOLOGY (4)
PR: BIO 201-203, CHM 211-213, one quarter of organic chemistry and a course in genetics is recommended. Introduction to the biology of microorganisms; structure, physiology and ecology of bacteria, algae, viruses, rickettsiae, and protozoa. Qtr. I, II, and III.

*Students will be required to pay travel expenses for field trips.
CB 4404 (MIC 423) MICROBIAL PHYSIOLOGY (3)
PR: MIC 351, BIO 401 or CI. A study of physiological and metabolic phenomena pertinent to the growth, development, regulation, inhibition, and death of microorganisms and to the chemical alterations they catalyze. (Formerly MIC 456.)

APB 4050 (MIC 451) APPLIED BACTERIOLOGY (5)
PR: MIC 352. A study of the applications of microbiology to industry, agriculture, medicine, and sanitary engineering. Lec.-Lab.

MCB 4115 (MIC 453) DETERMINATIVE BACTERIOLOGY (4)
PR: MIC 352, CHM 331-336. Survey of bacterial classification; detailed examinations of bacteria important to man in agriculture, in industry and as pathogens. Qtr. II.

MCB 4505 (MIC 457) VIROLOGY (4)
PR: MIC 352 and CI. The biology of viruses associated with plants, animals, and bacteria will be considered; the nature of viruses, mechanisms of viral pathogenesis, and interactions with host cells.

MCB 4934 (MIC 491) SEMINAR IN MICROBIOLOGY (1)
PR: Senior or advanced junior standing and CI. May be repeated once. (S/U only.)

APB 5575 (MIC 518) MEDICAL MYCOLOGY (5)
PR: MIC 352 or CI. A survey of the yeasts, molds, and actinomycetes most likely to be encountered by the bacteriologists, with special emphasis on the forms pathogenic for man.

MCB 5115 (MIC 552) ADVANCED BACTERIOLOGY (4)

MCB 5605 (MIC 558) MICROBIAL ECOLOGY (3)
PR: MIC 352, CI. A study of the theory and methodology of the quantification of microbial processes in natural habitats with special emphasis on aquatic and terrestrial systems.

MCB 5605 (MIC 559) LABORATORY METHODS IN MICROBIAL ECOLOGY (2)
CR: MIC 558 or CI. A study of the application of laboratory methods of microbiology to assess microbiological activities in natural systems in both qualitative and quantitative terms.

MCB 5936 (MIC 583) SELECTED TOPICS IN MICROBIOLOGY (1-4)
PR: CI. Each topic is a course in directed study under supervision of a faculty member.

MCB 653 (MIC 653) ADVANCED TOPICS IN CHEMICAL MICROBIOLOGY (3)
PR: MIC 423, Biochemistry or CI. An in depth study of metabolic and physiological phenomena associated with microorganisms, especially bacteria, including: growth, regulation, unique metabolic traits, morphogenesis, cell division, cell death and survival mechanisms.

PCB 6606 (MIC 654) BACTERIAL GENETICS (3)
PR: BIO 331, MIC 423 or CI. A survey of the recombinational systems found among the bacteria and bacterial viruses with emphasis on the molecular mechanisms of gene transfer, replication and expression and on the significance of these systems for our understanding of cellular functions.

PCB 6236 (MIC 655) ADVANCED IMMUNOLOGY (5)
PR: BIO 558 or CI. Discussion of the basic immune reaction, nature of antigenicity; basic immunological techniques and their use in biological research and the medical sciences.

--- (MIC 697) INDEPENDENT STUDY (var.)
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

MIC 6971 (MIC 699) THESIS: MASTERS'S
Repeatable. (S/U only.)

Biology-Zoology (ZOO)

ZOO 3713 (ZOO 311) COMPARATIVE VERTEBRATE ANATOMY (6)
PR: BIO 201-203. Anatomy of selected vertebrate types emphasizing evolutionary trends. Lec.-Lab.

ZOO 3203 (ZOO 313) INTRODUCTORY INVERTEBRATE ZOOLOGY (5)
PR: BIO 201-203. An introduction to the major invertebrate groups, with emphasis on local forms. Field work will be required. Lec.-Lab.

PCB 3700 (ZOO 371) HUMAN PHYSIOLOGY (4)
Lectures and discussions on the mechanisms of function of the human body. For non-majors credit only.

PCB 4184 (ZOO 411) HISTOLOGY (4)
PR: ZOO 311 and/or ZOO 422. Comparative approach to the study of tissues and the relation of their structure and function. Lec.-Lab.

ENV 4008 (ZOO 415) INTRODUCTION TO ENTOMOLOGY (4)
PR: BIO 201-203. An introduction to general aspects of insect morphology, development, and classification. The identification of local forms will be emphasized. Lec.-Lab. Qtr. III, IV.

ZOO 4303 (ZOO 416) VERTEBRATE ZOOLOGY (5)
PR BIO 201-203. Natural history, morphology, phylogeny and taxonomy of vertebrates. Lec.-Lab.

PCB 4253 (ZOO 422) DEVELOPMENTAL BIOLOGY (5)

PCB 4743 (ZOO 423) ANIMAL PHYSIOLOGY (5)
PR: BIO 401; CR: BIO 402. Advanced presentation of mechanisms employed by animals to interact with their environment, and to maintain their organization.

ZOO 4893 (ZOO 460) WILDLIFE AND FISH MANAGEMENT (3)
PR: BIO 201-203, BIO 445. An introduction to the principles of wildlife and fisheries management. Certain methods and techniques utilized in the management of exploited animal species will be introduced. Designed primarily for students interested in the wildlife and fish management profession.

ZOO 4203 (ZOO 461) ANIMAL SOCIAL BEHAVIOR (4)
PR: CI. An introduction to comparative animal behavior (Ethology), with emphasis on communication, social use of space, and behavioral evolution.

ZOO 4583 (ZOO 462) PRIMATE SOCIAL BEHAVIOR (4)
PR: BIO 201, 202, 203. An introduction to primate social behavior and behavioral ecology based on field-oriented research.

ZOO 4932 (ZOO 491) SEMINAR IN ZOOLOGY (1)
PR: Upper level. May be repeated once. (S/U only.)
ZOO 5235 (ZOO 513) PARASITOLOGY (5)  
PR: BIO 201-203. Fundamentals of animal parasitology and parasitism; the biology of selected animal parasites, including those of major importance to man. Lec.-Lab. Qtr. II.

ENV 5501 (ZOO 514) AQUATIC ENTOMOLOGY (4)  
PR: ZOO 415. Taxonomy, development, and ecology of aquatic insects with emphasis on local forms. Lec-Lab. Qtr. II (odd numbered years).

PCB 5306 (ZOO 515) LIMNOLOGY (5)  
PR: Cl. An introduction to the physical, chemical, and biological nature of fresh-water environments. Lec.-Lab. Qtr. III.

ZOO 5475 (ZOO 517) ORNITHOLOGY (5)  
PR: ZOO 416 or ZOO 311 and Cl. The biology of birds. Field trips emphasize local avifauna. Lec.-Lab. Qtr. III.

ZOO 5485 (ZOO 518) MAMMALOLOGY (5)  
PR: ZOO 416 or ZOO 311 and Cl. The biology of mammals, including systematic, ecology, natural history, and geographical distribution. Lec-Lab.

ZOO 5455 (ZOO 519) ICHTHYOLOGY (5)  
PR: ZOO 416 or ZOO 311 and Cl. Systematics of fishes, including major classification, comparative anatomy, embryology, and general distribution. Lec-Lab. (Also offered as MSC 519.)

ZOO 5285 (ZOO 520) BIOLOGY OF ECHINODERMS (5)  

PCB 5725 (ZOO 521) COMPARATIVE PHYSIOLOGY (5)  
PR: BIO 401-402. The evolution of physiological mechanisms. Lec.-Lab. Qtr. I.

ZOO 5415 (ZOO 525) BIOLOGY OF THE AMPHIBIA (5)  
PR: ZOO 416 or ZOO 311 and Cl. Major aspects of amphibian biology emphasizing fossil history, evolutionary morphology, sensory physiology, life history, and reproductive behavior. Lec-Lab. Field Trips. Qtr. III (even-numbered years).

ZOO 5425 (ZOO 526) BIOLOGY OF THE REPTILIA (5)  
PR: ZOO 416 or ZOO 311 and Cl. Major aspects of reptilian biology emphasizing fossil history, evolutionary morphology, sensory physiology, life history, and reproductive behavior. Lec-Lab. Field Trip. Qtr. III (odd numbered years).

ZOO 5815 (ZOO 545) ZOOGEOGRAPHY (3)  

PCB 5325 (ZOO 556) TERRESTRIAL ANIMAL ECOLOGY (4)  
PR: BIO 445. Field and laboratory investigations of the basic principles of ecology as applied to terrestrial animals. Lec-Lab.

ZOO 5555 (ZOO 557) MARINE ANIMAL ECOLOGY (5)  

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**CHEMISTRY (CHM)**

CHM 1015 (CHM 101) FOUNDATIONS OF UNIVERSITY CHEMISTRY (5)  
A survey of modern chemistry designed particularly for those with a poor preparation in algebra and/or chemistry as a preliminary to CHM 211. Lec. Qtr. I, III, IV.

CHM 2045 (CHM 211) GENERAL CHEMISTRY I* (3)  
CHM 211 students are expected to have performed well in the

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* Placement examination for admission to CHM 211 and CHM 215 offered the first day of registration each quarter, during the summer FOCUS program, and is available during weeks of scheduled classes. Students should consult registration schedules or Chemistry office for time and place.
 placement exam* or to have satisfactorily completed CHM 101. Fundamentals of chemistry; mass and energy relationships in chemical changes, equilibrium, chemical kinetics, atomic and molecular structure, descriptive chemistry of selected elements. Lec. and discussion. Qtr. I, II, III, IV.

CHM 2046 (CHM 212) GENERAL CHEMISTRY II (3) PR: CHM 211 or equivalent. Continuation of General Chemistry. Lec. and discussion. Qtr. I, II, III, IV.

CHM 2047 (CHM 213) GENERAL CHEMISTRY III (3) PR: CHM 212 or equivalent. Continuation of General Chemistry. Lec. and discussion. Qtr. I, II, III, IV.

CHM 2050 (CHM 214) ENVIRONMENTAL CHEMISTRY LABORATORY (4) PR: CHM 212 or equivalent. Fundamental techniques used in environmental chemistry, including basic manipulations and equipment. Lec.-lab.

CHM 2055 (CHM 215) ACCELERATED GENERAL CHEMISTRY I* (5) This course is designed for the beginning student who has a superior background in science and mathematics. The laboratory is project oriented. Entrance is by examination only. CHM 215-216 is equivalent to CHM 211-212-213 and 217-218-219. Lec.-lab and discussion. Qtr. I.

CHM 2056 (CHM 216) ACCELERATED GENERAL CHEMISTRY II (5) PR: CHM 215. Continuation of Accelerated General Chemistry. Lec.-lab and discussion. Qtr. II.

CHM 2045 (CHM 217) GENERAL CHEMISTRY I LAB (1) PR: CHM 211. Laboratory portion of General Chemistry I. Introduction to laboratory techniques; study of properties of elements and compounds; synthesis and analysis of natural and commercial materials. May not be taken concurrently with CHM 211. Qtr. I, II, III, IV.

CHM 2046 (CHM 218) GENERAL CHEMISTRY II LAB (1) PR: CHM 212, 217. Laboratory portion of General Chemistry II. Continuation of chemistry laboratory. May not be taken concurrently with CHM 212. Qtr. I, II, III, IV.

CHM 2047 (CHM 219) GENERAL CHEMISTRY III LAB (1) PR: CHM 213, 218. Laboratory portion of General Chemistry III. Continuation of chemistry laboratory. May not be taken concurrently with CHM 213. Qtr. I, II, III, IV.

CHM 2020 (CHM 271) CURRENT ISSUES IN CHEMISTRY (4) A survey of the important current issues in which chemistry affects our lives; e.g., environment, drugs, cancer, warfare, etc. No credit for chemistry majors.

CHM 2930 (CHM 291) JUNIOR SEMINAR (1) PR: CHM 213 or CHM 216. Interrelations of previous courses, the chemical literature, and examination of the nature of the industrial, governmental, and academic chemistry. Lecture and discussion. (S/U only.) Qtr. I, III, IV.

CHM 3610 (CHM 311) INTERMEDIATE INORGANIC CHEMISTRY (5) PR: CHM 213-219 or CHM 216. Fundamental principles of inorganic chemistry. Lec.-lab. Qtr. II, IV.


CHM 3210, 3210 (CHM. 331-332) ORGANIC CHEMISTRY I (3:2) PR: CHM 213-219 or CHM 216. Fundamental principles of organic chemistry and lab. Lecture and lab may not be taken concurrently. Qtr. I, II, III, IV.

CHM 3211, 3211 (CHM.333-334) ORGANIC CHEMISTRY II (3:2) PR: CHM 331-332 or equivalent. Continuation of Organic Chemistry and lab. Lecture and lab may not be taken concurrently. Qtr. II, III, IV.

CHM 3212,3212 (CHM 335-336) ORGANIC CHEMISTRY III (3:2) PR: CHM 333-334 or equivalent. Continuation of Organic Chemistry and lab. Lecture and lab may not be taken concurrently. Qtr. I, III, IV.

CHM 3400 (CHM 341) ELEMENTARY PHYSICAL CHEMISTRY (3) PR: CHM 213/219 or CHM 216, CHM 321, MTH 212, PHY 205-206. Introduction to equilibrium properties of macroscopic systems. Properties of solutions.

CHM 3401 (CHM 342) ELEMENTARY PHYSICAL CHEMISTRY II (3) PR: CHM 341. Kinetic behavior of systems, macromolecular solutions, and colloidal dispersions, nuclear chemistry, and spectroscopy.

CHM 3402 (CHM 343) ELEMENTARY PHYSICAL CHEMISTRY LAB (2) PR: Co-requisite with CHM 341 and/or CHM 342. A physical chemistry laboratory with emphasis on modern techniques and instruments. Lab.-lec.

BCH 3030 (CHM 351) INTRODUCTORY BIOCHEMISTRY (4) PR:CHM 333. Introduction to the chemistry and intermediary metabolism of biologically important substances. Lec. Qtr. I, II, III, IV.

BCH 3030 (CHM 354) BASIC BIOCHEMISTRY LABORATORY (3) PR: CHM 351. Practical work in determination and characterization of important biomolecules. Lec.-lab.

BCH 3021 (CHM 371) MODERN CHEMICAL SCIENCE (4) An introduction to some of the major problems in chemistry, its relation to other sciences, and its relevance to contemporary culture. Designed for non-science majors. No credit for Chemistry majors. Qtr. I, IV.

CHM 4610 (CHM 411) ADVANCED INORGANIC CHEMISTRY (4) PR: CHM 441 or CI. An advanced theoretical treatment of inorganic compounds. Lec. Qtr. I, III. (Formerly CHM 511.)

CHS 4310 (CHM 421) INSTRUMENTAL ANALYSIS (4) PR: CHM 443 or CI. Theory and practice of instrumental methods. Clinical Chemistry applications may be elected in the laboratory. Lec.-lab. Qtr. II, III. (Formerly CHM 521.)

CHS 4100 (CHM 423) RADIOCHEMISTRY (4) PR: CHM 321. Theory and applications of natural and induced radioactivity. Emphasis on the production, properties, measurement, and uses of radioactive tracers. Lec.-lab. Qtr. I, II. (Formerly CHM 523.)

CHS 4300 (CHM 425) FUNDAMENTALS OF CLINICAL CHEMISTRY (4) PR: CHM 321, 351. Theoretical and practical aspects of the analysis of various body fluids, with emphasis on the medical significance. Clinical chemistry majors must take CHM 426 concurrently. Lec. Qtr. I, III. (Formerly CHM 525.)

CHS 4301 (CHM 426) CLINICAL LABORATORY (2) PR: CHM 321, 351, and CI. Laboratory experience in some of the most important clinical determinations. CHM 425 must be taken concurrently. Lec.-lab. Qtr. I, III. (Formerly CHM 526.)

CHS 4300 (CHM 431) BASIC BIO-ORGANIC CHEMISTRY (4) PR: CHM 335 (or CHM 333 and CI). Nature, structure elucidation, synthesis and (in selected cases) organic chemical mecha-
nisms of biochemical involvement of the major classes of organic compounds found in living systems. Lec. only.

CHM 4410 (CHM 441) PHYSICAL CHEMISTRY I (4)
PR: CHM 321 and MTH 304. CR: PHY 205 or 305. Thermodynamics, the states of matter, solutions. Lec. Qtr. I, II.

CHM 4411 (CHM 442) PHYSICAL CHEMISTRY II (4)
PR: CHM 441. Introduction to quantum mechanics and molecular spectroscopy. Lec. Qtr. III.

CHM 4412 (CHM 443) PHYSICAL CHEMISTRY III (4)

CHM 4130 (CHM 445) METHODS OF CHEMICAL INVESTIGATION I. ANALYTICAL-PHYSICAL (4)
PR: CHM 321, 335-336, CR: CHM 441. Theory and applications of instrumental methods in chemical research with emphasis on electrochemical techniques. Lec.-lab. Qtr. I, II.

CHM 4131 (CHM 446) METHODS OF CHEMICAL INVESTIGATION II. ANALYTICAL-PHYSICAL (4)

CHM 4132 (CHM 447) METHODS OF CHEMICAL INVESTIGATION III. CHEMICAL SYSTEMS (3)
PR: CHM 446. Continuation of CHM 446. Emphasis on studies of chemical systems using a variety of techniques. Lec.-lab. Qtr. III, IV.

CHM 4070 (CHM 471) HISTORICAL PERSPECTIVES IN CHEMISTRY (4)
PR: CHM 213; or senior standing, and CI. A study in depth of the historical and philosophical aspects of outstanding chemical discoveries and theories. Lec-disc. Qtr. II.

CHM 4071 (CHM 475) THE MICROWORLD OF MOLECULES, ATOMS AND ELECTRONS (4)
The nature of the material world from the philosophic discussion of antiquity, through some speculations of the Middle Ages and the Renaissance to the quantitative thinking and measurements of modern science. No previous background in science of mathematics is necessary. No credit for Chemistry majors.

CHM 4970 (CHM 481) UNDERGRADUATE RESEARCH (1-6)
PR: CI.(S/U only.) Qtr. I-IV.

CHM 4932 (CHM 483) SELECTED TOPICS IN CHEMISTRY (1-6)
PR: CI. The course content will depend on the interest of faculty members and student demand.

BCH 4941 (CHM 485) CLINICAL CHEMISTRY PRACTICE (3-12)
PR: CI. Laboratory practice in clinical chemistry laboratories in the Tampa Bay area. (S/U only.) Qtr. I-IV.

CHM 4931 (CHM 491) CHEMISTRY SEMINAR (1)
PR: Senior standing. Discussions of selected significant chemical topics of recent interest. (S/U only.) Qtr. II, III.

CHM 5621 (CHM 512) PRINCIPLES OF INORGANIC CHEMISTRY (4)
PR: CHM 442 or CI. Chemical forces, reactivity, periodicity, and literature in inorganic chemistry; basic core course. Lec. Qtr. I.

CHM 5225 (CHM 532) INTERMEDIATE ORGANIC CHEMISTRY (4)
PR: CHM 335, 336 or equivalent. A study of stereochemistry, spectroscopy, theories of bonding, acid-base chemistry, and their application to the understanding of organic reactions. Lec.

CHM 5430 (CHM 541) CHEMICAL THERMODYNAMICS (4)
PR: CHM 443 or CI. The applications of thermodynamic theory to the study of chemical systems with emphasis on the energetics of reactions and chemical equilibria. Lec.

CHM 5425 (CHM 542) APPLICATIONS IN PHYSICAL CHEMISTRY (4)
PR: CHM 443. Applications of chemical theory to chemical systems with emphasis on chemical kinetics and molecular spectroscopy. Lec.

BCH 5105 (CHM 554) TECHNIQUES IN BIOCHEMISTRY (2)
PR: CHM 555 or 657. Biochemistry laboratory with emphasis on modern techniques for use in biochemical research. Qtr. III.

BCH 5065 (CHM 555) BIOCHEMISTRY CORE COURSE (4)
PR: Either CHM 335-6 and CHM 341 or 441 or graduate standing. A one-quarter survey course in biochemistry for graduate students in chemistry, biology, and other appropriate fields and for particularly well-qualified undergraduates. Lec. Qtr. III.

CHM 5931 (CHM 583) SELECTED TOPICS IN CHEMISTRY (1-6)
PR: CI. The following courses are representative of those that are taught under this title: Natural Products, Stereocchemistry, Reactive Intermediates, Photochemistry, Instrumental Electronics, Advanced Lab Techniques, Heterocyclic Chemistry, etc.

CHM 6650 (CHM 611) STRUCTURAL INORGANIC CHEMISTRY (4)
PR: CHM 512 or CI. Modern theories of bonding and structure of inorganic compounds, including coordination theory, stereochemistry, solution equilibria, kinetics, mechanisms of reactions, and use of physical and chemical methods. Lec. Qtr. II.

CHM 6625 (CHM 613) CHEMISTRY OF THE LESS FAMILIAR ELEMENTS (4)
PR: CI. An integrated treatment of the conceptual and factual aspects of the traditionally less familiar elements, including noble-gas elements, unfamiliar non-metals, alkali and alkaline-earth metals, and the transition elements. Lec. Qtr. III.

CHM 6150 (CHM 621) ADVANCED ANALYTICAL CHEMISTRY (4)
PR: CI. A study of complete analytical process, including sample handling, separations, the analysis step, and statistical interpretation of data. Emphasis placed on separations and statistics. Lec. Qtr. III.

CHM 6153 (CHM 623) ELECTROCHEMISTRY (4)

CHM 6280 (CHM 631) ADVANCED ORGANIC CHEMISTRY I. NATURAL PRODUCTS (4)
PR: CHM 532 or CI. A study of any of several of the following topics: terpenes, steroids, vitamins, alkaloids, porphyrins, purine, and antibiotics. Qtr. III.

CHM 6260 (CHM 632) ADVANCED ORGANIC CHEMISTRY II. PHYSICAL-ORGANIC (4)
### COMMUNICOLOGY

**Chairperson:** S. W. Kinde; **Professors:** L. H. Ricker, S. I. Ritterman, D. C. Shepherd; **Associate Professors:** J. B. Crittenden, S. W. Kinde; **Assistant Professors:** A. M. Guilford, J. W. Scheuerle; **Instructors:** R. L. Carlson, J. E. Falany, J. P. Glover, M. C. Guilford, C. F. Kuffel; **Lecturer:** E. L. Kasan; **Speech and Hearing Clinician:** K. K. Hollahan; **Adjunct:** S. L. Ainsworth; **Courtesy Professors:** T. E. Edwards, F. X. Frueh, E. T. Gray; **Courtesy Associate Professor:** W. W. Wittish; **Courtesy Assistant Professor:** G. H. Horsfall.

#### SPA 2001 (CLY 201) SURVEY OF COMMUNICATION DISORDERS

A general survey course concerning the nature and prevention of disorders of communication.

#### SPA 3020 (CLY 301) INTRODUCTION TO SPEECH PATHOLOGY

The scope of speech pathology as a profession and field of study. An introduction to speech and language disorders (articulation, stuttering, voice, aphasia, etc.): etiologies, major treatment approaches, and research findings.

#### SPA 3110 (CLY 302) INTRODUCTION TO AUDIOLOGY

The scope of audiology as a profession and field of study. An introduction to the study of hearing impairments: classifications, etiologies, major treatment approaches, and research findings.
The neurologic and anatomical basis of communication disorders. Comparisons of normal and pathological organic structures and their functional dynamics. Separate sections concentrating on normal and abnormal aural physiology are scheduled for those students with a primary emphasis in audiology.

SPA 3080 (CLY 312) INTRODUCTION TO RESEARCH PROCEDURES IN COMMUNICOLGY
Perspective on research in speech pathology and audiology. Introduction to multivariate design considerations as they apply to research, speech and hearing laboratory and clinical settings. Analysis of basic hypothesis testing.

LIN 3260 (CLY 313) APPLIED PHONOLOGY
An examination of phoneme systems and distinctive features of their alogphonic variants with particular emphasis upon those superfixes and suprasegmental modifiers necessary to the understanding and recording of early developmental and deviant speech patterns.

SPA 4363 (CLY 482) NATURE AND NEEDS OF THE HEARING IMPAIRED
A study of the effects of auditory disorders upon the organization and expression of behavioral patterns as they relate to motivation, adjustment and personality.

SPA 4930 (CLY 483) SELECTED TOPICS
PR: CI. A reading program of topics in speech pathology and/or audiology conducted under the supervision of a faculty member. May be repeated three times.

SPA 4050 (CLY 498) INTRODUCTION TO SPEECH PATHOLOGY AND AUDIOLOGY PRACTICUM
(1-12) Observation and participation in speech pathology and audiology practicum in the University clinical laboratory.

SPA 5131 (CLY 511) SPEECH PATHOLOGY INSTRUMENTATION
PR: CI. Calibration, usage and specific applications of specialized instruments available in dealing with speech and language disorders. Includes: recording, sonograph, audiofeedback, video equipment, behavior measuring devices.

SPA 5132 (CLY 512) AUDIOLOGY INSTRUMENTATION
PR: CI. Calibration, usage and specific applications of specialized instruments available in dealing with the identification and measurement of hearing disorders. Includes: sound level recorders, audiometers, and the electrophysiological measurement devices.

SPA 5002 (CLY 513) THE SCIENCE OF COMMUNICATION DISORDERS
PR: CLY 301 or 302 or CI. The application of behavioral and learning principles to the study of the normal development of speech, language and hearing and to the management of disorders.

SPA 5552 (CLY 571) EVALUATION OF ORAL COMMUNICATION DISORDERS
PR: Admittance to the Program or CI. The administration, evaluation, and reporting of diagnostic tests and procedures used in the assessment of speech and language disorders.

SPA 5303 (CLY 572) AUDIOLOGY: HEARING SCIENCE
PR: Admittance to the Program or CI. Introduction to psychoacoustical phenomenon as it relates to the measurement of hearing. Overview of principles and methods of identification audiometry with emphasis on newborn, preschool, and school age populations. Procedures for determining pure tone thresholds including the application of masking techniques. Fundamental concepts related to hearing aids and their benefits. Management of hearing impaired individuals including counseling.

SPA 5312 (CLY 573) AUDIOLOGY: SPEECH AUDIOMETRY
PR: CLY 572 or CI. Advanced study of psychoacoustical phenomenon as it relates to the measurement of hearing. Introduction emphasizing principles and methods of determining hearing acuity through the use of speech stimuli. Management of clients from pertinent case histories through post-evaluation recommendations. Thorough consideration of hearing aids with special attention on techniques of selecting and fitting aids in clinical setting.

SPA 5550 (CLY 574) METHODS FOR ORAL COMMUNICATION DISORDERS
PR: CLY 571 or CI. An in-depth analysis of classic and contemporary methods employed in the management of communicatively impaired individuals. Experimental approaches are reviewed through current medical, psychological, speech, language and hearing journals.

SPA 5600 (CLY 575) MANAGEMENT OF COMMUNICATION DISORDERS
PR: CI. The planning of programs for individuals with speech, language, and hearing impairments. Includes administration of programs in public schools, clinics, and private practice.

SPA 5210 (CLY 576) COMMUNICATION DISORDERS: VOICE
PR: CI. A comprehensive study of the medical and physical aspects of voice disorders. Primary emphasis is on therapeutic management.

SPA 5200 (CLY 577) COMMUNICATION DISORDERS: ARTICULATION
PR: CI. An examination of normal and deviant articulatory acquisition and behavior. Presentation of major theoretical orientations and the therapeutic principles based upon them.

SPA 5222 (CLY 578) COMMUNICATION DISORDERS: STUTTERING
PR: CI. A comprehensive study of the diagnosis and modification of stuttering based on a two-factor model. Other major theories are considered and evaluated.

SPA 5224 (CLY 579) TECHNIQUES OF AUDITORY TRAINING
PR: CI. An analysis of theories of auditory reception and amplification. A study of the methods and techniques employed in the development and habilitation of auditory skills for the hearing impaired.

SPA 5402 (CLY 580) COMMUNICATION DISORDERS: LANGUAGE
PR: CI. Examination of research and clinical literature presenting major theoretical orientations pertaining to the etiology, evaluations, and treatment of those factors that hinder or interrupt normal language acquisition or function.

SPA 5910 (CLY 581) SUPERVISED RESEARCH
(1-12) PR: CI. Individualized programs of student research approved and supervised by a faculty member.

SPA 5930 (CLY 583) SELECTED TOPICS
PR: CI. A reading program of topics in speech pathology and/or audiology conducted under the supervision of a faculty member. May be repeated three times.

SPA 5557 (CLY 598) SPEECH PATHOLOGY AND AUDIOLOGY PRACTICUM
(1-12) PR: CI. Participation in speech pathology and audiology practicum in the University clinical laboratory and selected field settings.

SPA 6245 (CLY 620) CLEFT PALATE
PR: CI. An in-depth study of speech, language and hearing problems associated with cleft lip and cleft palate. Consideration is given to a multidisciplinary approach to therapy and rehabilitation.

SPA 6410 (CLY 621) APHASIA
PR: CI. A consideration of the neurological and psychological aspects of aphasia as they relate to communication disorders.
Specific language therapy approaches are discussed and evaluated.

**SPA 6231 (CLY 622) CEREBRAL PALSY**
PR: CI. A study of the medical, physical, occupational, speech, language, and hearing problems of the cerebral palsied. Therapy techniques are reviewed and evaluated.

**SPA 6205 (CLY 623) DIALECT AS A COMMUNICATION DISORDER**
PR: CI. Research and clinical literature on dialect as a communication disorder.

**SPA 6305 (CLY 673) CHILD AUDIOLOGY**

**SPA 6307 (CLY 674) SPECIAL AUDITORY TESTS**
PR: CLY 573 or CI. History, development, rationale and techniques for administering hearing tests to determine site of lesion, including those requiring special instrumentation. The detection and clinical management of pseudohypacusis including the use of objective audiometry.

**SPA 6325 (CLY 675) TECHNIQUES OF SPEECH READING**
PR: CI. Speech reading as a language skill for the deaf and hard of hearing child and adult. Analysis of theories, methods, and systems.

**SPA 6345 (CLY 676) HEARING DISORDERS**
PR: CLY 674 or CI. The compilation and interpretation of hearing test data for diagnosing hearing impairment. Investigation of medical and surgical techniques for the treatment of hearing loss, coordinating information for planning the treatment and rehabilitation of the hearing impaired, including the involvement of other professionals.

**SPA 6354 (CLY 677) HEARING CONSERVATION**
PR: CLY 573 or CI. A comprehensive study of all aspects of hearing conservation, especially those relating to the detection and prevention of hearing loss in both children and adult populations. Special attention is given to problems encountered by industry.

**SPA 6825 (CLY 680) RESEARCH PROCEDURES IN SPEECH PATHOLOGY AND AUDIOLOGY**
PR: CI. Advanced research and experimental design techniques employed in clinical and laboratory settings in speech pathology and audiology. Introduction to research technologies: review of stylistic considerations in research writing.

**SPA 6910 (CLY 681) DIRECTED RESEARCH**
PR: GR. Master's level. Repeatable. (S/U only.)

**SPA 6930 (CLY 683) SELECTED TOPICS**
PR: CI. A reading program of topics in speech pathology and/or audiology conducted under the supervision of a faculty member. May be repeated three times.

**SPA 6423 (CLY 684) LANGUAGE FOR THE HEARING IMPAIRED**
PR: CLY 301, 302, 482 or CI. Techniques and materials of teaching language to children with auditory disorders. Evaluation and analysis of contemporary methods.

**SPA 6332 (CLY 685) COMMUNICATIVE SKILLS FOR THE HEARING IMPAIRED**
PR: CLY 301, 302, 482. Application and evaluation of techniques for teaching symbolic functioning to children with hearing impairments. Consideration of developmental and remedial aspects of reading.

**SPA 6671 (CLY 699) THESIS: MASTER’S**
Repeatable. (S/U only.)

### COOPERATIVE EDUCATION (COE)

**Coordinating Staff:** G. F. Lentz, L. Berman, G. R. Card, E. R. Knight, E. V. Hess

- **COE 171** COOPERATIVE EDUCATION, 1ST TRAINING PERIOD
  PR: 45 hours of academic credit, acceptance in Cooperative Education Program (S/U only.)

- **COE 172** COOPERATIVE EDUCATION, 2ND TRAINING PERIOD
  PR: COE 171. (S/U only.)

- **COE 271** COOPERATIVE EDUCATION, 3RD TRAINING PERIOD
  PR: COE 172. (S/U only.)

- **COE 272** COOPERATIVE EDUCATION, 4TH TRAINING PERIOD
  PR: COE 271. (S/U only.)

- **COE 371** COOPERATIVE EDUCATION, 5TH TRAINING PERIOD
  PR: COE 272. (S/U only.)

### CRIMINAL JUSTICE (CJP)

**Chairperson:** W. R. Blount (Acting); **Professor:** H. Vetter; **Associate Professors:** W. R. Blount, M. C. Dertke, D. P. Geary, P. W. Lewis, J. T. Reilly, I. J. Silverman, M. Silverman, M. Vega; **Assistant Professor:** H. Harper; **Instructor:** D. L. Agresti; **Adjunct:** S. Oster.

**CCJ 2030 (CJP 200) MAN, CRIME, AND SOCIETY**
PR: PSY 200, SOC 201, or equivalent or CI. An introduction survey of the American criminal justice system. The nature of crime, law enforcement, the court system, and correctional practices and institutions will be covered. Not for major credit.

**CCJ 2020 (CJP 300) SURVEY OF CRIMINAL JUSTICE SYSTEM**
PR: PSY 200, SOC 201, or equivalent or CI. An introduction
to the major institutions associated with criminal justice, their structure, personnel, objectives, resources, and operation. Course content also includes developing an understanding of criminal law, terminology and procedure. This course is designed to provide a broad overview of the activities, language, concepts and career opportunities of the entire Criminal Justice System. The course may include an exploratory project, encouraging the student to use his or her own initiative to explore, observe and interview in one or more local institutions of criminal justice. (Formerly CJP 201.)

CCJ 3620 (CJP 301) NATURE OF CRIME (4)
PR: CJP 300. This course is designed to provide a basic understanding of the complex factors related to crime in America. Focus will be centered on reviewing the basic issues, scope, and costs stemming from criminal activities.

CCJ 3280 (CJP 362) LEGAL FOUNDATIONS OF CRIMINAL JUSTICE (4)
PR: CJP 300, PSY 200 or CI. Content of this course examines the effects upon the criminal justice system of the freedoms of habeas corpus, bills of attainder and ex post facto. The course focuses on the acidity of law enforcement officers. Attention will be given to experimental and demonstration programs as well as to generally accepted and established methods.

CCJ 3610 (CJP 315) CHARACTERISTICS OF THE OFFENDER (4)
PR: Junior standing plus CJP 301 or CI. A four-course series focusing on those individuals being processed through the criminal justice system. Each course will examine the characteristics of a special offender group, its impact on the system, and the system’s potential to change this class of offender behavior patterns. (May be taken with different subject matter up to 16 hours.)

CCJ 4110 (CJP 410) THEORY AND PRACTICE OF LAW ENFORCEMENT (4)
PR: Junior standing plus CJP 302 or CI. Designed to provide an in-depth summary of current philosophies and techniques used in the field of law enforcement with special attention given to the roles of law enforcement officers. Attention will be given to the new experimental programs and techniques.

CCJ 4130 (CJP 412) THE LAW ENFORCEMENT OFFICER AND THE COMMUNITY (4)
PR: Junior standing plus CJP 410, or CI. This course examines the area of human relations especially as it applies to police functions within the community. Topics of prejudice and discrimination are emphasized.

CCJ 4360 (CJP 420) THEORY AND PRACTICE OF CORRECTIONS (4)
PR: Junior standing plus CJP 301 or CI. The scope of this course relates to the analysis of the different treatment philosophies and techniques currently in use in the field. Attention will be given to experimental and demonstration programs as well as to generally accepted and established methods.

CCJ 4540 (CJP 421) JUVENILE CORRECTIONS (5)
PR: Junior standing plus CJP 420, or CI. Provides an in-depth analysis of the different treatment philosophies and techniques used in the field of juvenile corrections today. Special attention is given to experimental and demonstration programs as well as to traditional and established methods. Students will be required to work in a juvenile corrections agency and to attend field trips.

CCJ 4330 (CJP 422) THE PROBATION AND PAROLE PROCESS (5)
PR: Junior standing plus CJP 420, or CI. The concepts of probation and parole will be thoroughly explored and related to actual and potential treatment situations.

CCJ 4340 (CJP 425) INDIVIDUAL AND GROUP PROCESSES IN CORRECTIONAL TREATMENT I (3)
PR: Senior standing, PSY 200, CJP 421. Designed to introduce the student to theories and methods underlying treatment modalities currently employed in corrections.

CCJ 4341 (CJP 426) INDIVIDUAL AND GROUP PROCESSES IN CORRECTIONAL TREATMENT II (3)
PR: Senior standing plus CJP 425. The student will be introduced to practical applications within a correctional setting involving both individual and group situations.

CCJ 4700 (CJP 480) RESEARCH METHODS IN CRIMINAL JUSTICE (4)
PR: Junior standing plus CJP 300, or CI. Designed to give the criminal justice major an introduction to research methodology and the evaluation of research. This course may not be taken for credit if the student has already successfully completed SSI 301, Social Science Statistics, ECN 231, Business and Economic Statistics I, or MTH 345, Introductory Statistics I.

CCJ 4910 (CJP 481) DIRECTED RESEARCH (1-5)
PR: CI. This course is designed to provide students with a research experience in which they will work closely with faculty on the development and implementation of research projects in the area of criminal justice.

CCJ 4990 (CJP 485) DIRECTED READINGS (1-5)
PR: CI. This course is specifically designed to enable advanced students the opportunity to do in-depth independent work in the area of criminal justice. Each student will be under the close supervision of a faculty member of the program.

NOTE: CJP 481 & CJP 485. (a) Students wishing to enroll must make arrangements with a faculty member during the quarter prior to actually taking the course, (b) a minimum of four (4) CJP courses must have been completed satisfactorily prior to enrollment, (c) first consideration will be given to CJP majors, and (d) individual faculty members may add additional requirements at their discretion.

CCJ 4934 (CJP 491) SEMINAR IN CRIMINAL JUSTICE (3)
PR: Senior standing and CI. The seminar (multi-course series — variable topics) will consider the various changes occurring in the field of criminal justice with added emphasis placed on the responsibilities of careers in the field. (May be taken with different subject matter up to 12 hours.)

CCJ 4940 (CJP 499) INTERNSHIP FOR CRIMINAL JUSTICE MAJORS (3-12)
PR: Senior standing. The internship will consist of placement with one or more of the agencies comprising the criminal justice system. This course will enable the students to gain meaningful field experience related to their future careers. Each three-hour block of credit will require a minimum of ten hours of work per week within the host agency in addition to any written work or reading assignments. (S/U only.)

CCJ 6605 (CJP 601) THEORIES OF DEVIANCE (4)
An introduction and comparison of major historical and contemporary theories as they relate to the explanation of criminal behavior. Attention will be given to developing, on the part of the student, a frame-of-reference by which he can organize and understand the empirical factors operating in the Criminal Justice System.

CCJ 6705 (CJP 602) INTRODUCTION TO RESEARCH AND EVALUATION IN CRIMINAL JUSTICE (4)
An introduction to research, evaluation, statistics, data man-
agement and management information procedures. Emphasis will be given to the role of each of these topics as monitors and change agents in criminal justice, particularly in police management and corrections.

CCJ 6285 (CJP 603) LAW AND CRIMINAL JUSTICE
An exposition of historical and contemporary legal principles, procedures and issues as reflected in Constitutional provisions, statutes and case law.

CCJ 6455 (CJP 610) COMMUNITY CORRECTIONAL ADMINISTRATION
This course consists of an analysis of the complex issues and controversies related to the development and management of modern community-based corrections programs. May be repeated up to 9 hours.

--- (CJP 611) CORRECTIONAL TREATMENT METHODS
Designed to acquaint the beginning graduate student with general conditions, skills and techniques required in order to provide satisfactory treatment for both adult and juvenile offenders. Emphasis will be placed on familiarizing the student with those factors and conditions which facilitate treatment and the goals of treatment in a community correctional setting. In addition, several specific and widely used treatment approaches will be extensively covered and practiced during this course. May be repeated up to 9 hours.

CCJ 6725 (CJP 612) CORRECTIONAL PLANNING
This course will provide the student with an in-depth examination of urban correctional planning processes. Topics included will deal with the development of personnel, budgets, and facility plans and their implementation. May be repeated up to 9 hours.

--- (CJP 613) SEMINAR IN COMMUNITY CORRECTIONS
This course will provide a mechanism by which staff and students can focus on the latest events, issues, and problems confronting community corrections programming. May be repeated up to 6 hours.

CCJ 6405 (CJP 620) POLICE ADMINISTRATION
This course is designed to cover the major elements of urban police administration including personnel selection and promotion, program development, and management techniques. May be repeated up to 6 hours.

CCJ 6110 (CJP 621) URBAN POLICE PROBLEMS
This course addresses itself to the major problems confronting urban police departments. Areas of concentration will be racial tensions; police corruption, politicalization, etc. May be repeated up to 9 hours.

CCJ 6726 (CJP 622) URBAN POLICE PLANNING
This course will examine contemporary law enforcement planning and will focus on techniques and skills required to forecast future needs of police agencies in rapidly expanding metropolitan areas. May be repeated up to 9 hours.

--- (CJP 623) SEMINAR IN URBAN LAW ENFORCEMENT
Designed to provide an in-depth review of contemporary issues and problems as they relate to urban police administration. May be repeated up to 9 hours.

CCJ 6709 (CJP 630) RESEARCH AND EVALUATION METHODS
A detailed coverage of statistical research and evaluation techniques utilized for research and reporting practices in Criminal Justice. Data management, field experimentation and research methodology will be included as they apply. May be repeated up to 6 hours.

CCJ 6475 (CJP 631) SYSTEMS ANALYSIS IN CRIMINAL JUSTICE
Time will be spent on the design and analysis of both existing and student created systems, with emphasis on the role of system analysis as it applies to management information systems, computer based systems. In addition, attention will be directed to retrieval strategies, reducing work loads, simplification, formatting, form design and control, data organization costs. May be repeated up to 6 hours.

CCJ 6466 (CJP 632) RESOURCE DEVELOPMENT AND ACQUISITION
Required for Planning and Evaluation tract students, optional for others, this course will survey organizations which provide financial assistance to Criminal Justice agencies. In all cases, an analysis of criteria, limitations and availability will be made. Practical experience in proposal planning and submission will be provided.

CCJ 6946 (CJP 660) GRADUATE PRACTICUM IN CRIMINAL JUSTICE*
(1-4) Practicum will consist of placement with a criminal justice agency selected by the student in consultation with his committee. This placement will enable the student to gain high level field experience related to their chosen career field. A minimum of 24 graduate hours in Criminal Justice must be completed prior to enrollment. (S/U only.) (Formerly CJP 681.)

CCJ 6910 (CJP 681) DIRECTED RESEARCH.
PR: GR. Master’s level. Repeatable. (S/U only.)

CCJ 6935 (CJP 690) TOPICS IN CRIMINAL JUSTICE
PR: Graduate standing in the Criminal Justice Program. The field of criminal justice is characterized by a wide variety of issues and controversies that are of topical concern. This seminar provides a forum for analyzing and discussing these topics as their importance and the accumulation of data warrants. Classics in the criminal justice literature may be included among the topics for treatment in this course.

CCJ 6947 (CJP 691) CRIMINAL JUSTICE INTERNSHIP*
(12) The internship will place the student in a criminal justice position commensurate with his skills so that he may be able to blend theory with experience. Placement, which will be full-time for one year, will be worked out between the agency, the student, and the student's committee. All graduate academic course work must be completed prior to enrollment. (S/U only.)

CCJ 6920 (CJP 693) PRO SEMINAR IN CRIMINAL JUSTICE
One hour is required for all students. This variable topic listing is a forum primarily for the presentation and discussion of ethical and research ideas by faculty, guests, and students to aid students in linking theory and research, in understanding contemporary, problem oriented research, and in developing thesis subjects. Any issue of professional concern may be treated. May be repeated up to 5 hours. At least one hour should be taken during first quarter in the program.

CCJ 6971 (CJP 699) THESIS: MASTER’S
Repealable. (S/U only.)
*Practicum is required of all student who are not selected for or who choose not to participate in the alternative one-year internship. To be completed during the second year in the program.

DANCE (DAN)

modern dance technique. Practical work in beginning exercises and movement phrases, utilizing changing rhythms and dynamics. May be repeated.


DAA 2160 (DAN 201) BEGINNING MODERN
PR: Admission by audition. Study of basic principles of
DAA 2200 (DAN 202) BEGINNING BALLET (3)
PR: Admission by audition. Basic positions and fundamental barre exercises. Stress on correct alignment of the body and the application of simple step combinations in centre work. The use of ballet vocabulary (French terms). Material is covered almost totally as practical work in class with a few outside projects. Concert and performance attendance required. May be repeated.

DAA 2140 (DAN 203) CHOREOGRAPHY I (3)
Study and execution of basic principles of improvising. Preparation of studies in theme and variations, breath phrases and metric phrases. May be repeated.

DAA 3161 (DAN 301) INTERMEDIATE MODERN (4)
PR: Admission by audition. Continuation of DAN 201. Further emphasis on style and phrasing. Work in projecting mood and quality by dancing and rehearsing in more advanced student choreography, leading to performance. Rehearsal hours to be arranged. May be repeated.

DAA 3201 (DAN 302) INTERMEDIATE BALLET (4)
PR: Admission by audition. Continuation of DAN 202. Intensification of barre exercises for the development of strength and form. Centre exercises to develop quickness of mind/body coordination. Most of the ballet steps are introduced. Application of phrasing and quality of movement. Adagio, pirouettes, and allegro are specifically stressed. Material covered as practical work in class with concerts and performances. Rehearsal hours to be arranged. May be repeated.

DAA 3142 (DAN 303) CHOREOGRAPHY II (3)
PR: DAN 203 or CI. Preparation of studies in rhythm, dynamics, form and motivation, culminating in a solo. May be repeated.

DAA 3502 (DAN 304) JAZZ DANCE (2)
PR: DAN 301 or DAN 302 or CI. A technique class with an emphasis on highly stylized, percussive movement on a strong rhythmic base. Required is the performance of a short dance sequence encompassing these skills. May be repeated.

DAN 3603 (DAN 305) MUSIC FOR DANCE (3)
Development of practical music skills in relation to dance. Emphasis on rhythm and the relationship of music forms to dance. May be repeated up to 6 credit hours.

DAA 3492 (DAN 311) REPERTORY (1)
The development and performance of solo and/or group dances. Open to all University students by audition. May be repeated.

DAA 3222 (DAN 312) POINTE TECHNIQUE (1)
PR: DAN 302. This course introduces fundamental exercises for the development of pointe technique. Material covered as practical work in class with a few outside projects, concerts, and performances. Rehearsal hours to be arranged. Must be repeated for a total of 6 hours by Ballet Majors. May be repeated.

DAN 3110 (DAN 313) WORLD HISTORY OF DANCE (3)
Study of the development of dance from its inception through the Middle Ages. Reading, lecture.

DAN 3100 (DAN 370) INTRODUCTION TO DANCE (3)
For non-dance majors, a study of the art of dance. Lecture and activities including Modern, Ballet, Jazz, Ethnic and Tap. DAN 370 may be used for University General Distribution Requirement by the non-major, and may be used to satisfy part of the 9-hour in-College requirement for Fine Arts Majors in Art, Music and Theatre.

DAA 3700 (DAN 371) HATHA YOGA (2)
A course to experience and practice the basic asanas (bodily postures) pranayama (breath control), and deep relaxation of body and mind. Hatha Yoga prepares the student for dance movement. May be used for University General Distribution Requirement by the non-major, and may be used to satisfy part of the 9-hour in-College requirement for Fine Arts Majors in Art, Music and Theatre.

DAA 4162 (DAN 401) ADVANCED MODERN (5)
PR: Admission by audition. Continuation of DAN 301 on an advanced level. Work in improvisation and individual invention creating an awareness of many possibilities of movement. Intensive work on the growth of personal performance styles as a means of communication. Equal emphasis will be given to training the body in the development of technical excellence. Dancing in student choreography leading to performance. Rehearsal hours to be arranged. Must be repeated for a minimum of 20 hours by the Modern Major. May be repeated.

DAA 4202 (DAN 402) ADVANCED BALLET (5)
PR: Admission by audition. Continuation of DAN 302. Perfecting the execution of barre work including body alignment, quality of movement, strength, form, quickness of mind and alertness. Intensification of centre work. More stress on aesthetic quality of movement and phrasing. Perfecting the execution of classical ballet technique and a continuing awareness of performing projection and audience communication for those with professional performing career in mind. Complete background and knowledge of the classical ballet techniques required. Students expected to be proficient in pointe work. Material covered as practical work in class with a few outside projects, concerts, and performances. Rehearsal hours to be arranged. Must be repeated for a minimum of 20 hours by the Ballet Major. May be repeated.

DAN 4800 (DAN 403) CHOREOGRAPHY III (3)
PR: DAN 303 or CJ. Work directed toward duets and group dances. The students will submit choreographic ideas for instructor’s approval, then proceed with rehearsals. The best dances will be performed and fully produced under supervision of student choreographers. Reading, lecture, laboratory. May be repeated.

DAN 4151 (DAN 413) HISTORY OF 20TH CENTURY BALLET (3)

DAN 4171 (DAN 453) DANCE SENIOR SEMINAR (3)
PR: Senior or CC. To aid majors to understand, appraise and perfect their own art and technique through critical and aesthetic judgements of their colleagues.

DAA 4143 (DAN 463) CHOREOGRAPHY IV (3)
PR: DAN 403. The student will prepare studies based on free form, minimal art, and chance methods. Reading, lecture, laboratory. May be repeated. (Formerly DAN 503.)

DAN 4131 (DAN 464) HISTORY OF MODERN DANCE (3)
Study of the development of modern dance in the 20th Century in America; the different techniques, concepts in choreography and leading artists of our time. Reading, film, and lecture. (Formerly DAN 513.)

DAN 4905 (DAN 481) DIRECTED STUDY (1-6)
PR: CC. May be repeated. Independent studies in the various areas of Dance. Course of study and credits must be assigned prior to registration.

DAN 4930 (DAN 483) SELECTED TOPICS IN DANCE (1-6)
PR: CI and CC. The content of the course will be governed by student demand and instructor interest. May be repeated for credit for different topics only.

DAN 4905 (DAN 485) DIRECTED READING (3)
PR: CI and CC. Readings in a topic of special interest to the student. Selection of topic and materials must be agreed upon and appropriate credit must be assigned prior to registration. A contract with all necessary signatures is required for registration. May be repeated for credit for different topics only.
ECONOMICS (ECN)


ECO 1000 (ECN 100): CONTEMPORARY ECONOMIC PROBLEMS (5)
An introduction to economics in the context of contemporary social issues. The problem of economic scarcity, the role of ethical value in economics, economic processes and the economic analysis of social issues.

ECO 2023 (ECN 201): ECONOMIC PRINCIPLES I: MICROECONOMICS (4)
The fundamental economic concept of scarcity, alternative courses of action and the problem of choice. How an economy decides what to produce, how to produce and how to reward participants in the economy. Attention is focused on factors affecting consumer wants and on the behavior of price in different types of markets.

ECO 2013 (ECN 202): ECONOMIC PRINCIPLES II: MACROECONOMICS (4)
An introduction to the modern theory of income determination with emphasis upon the application of monetary and fiscal policy oriented toward the accomplishment of the macro-economic objectives of full employment, economic growth, and balance of payments stability.

ECO 2410 (ECN 231): BUSINESS AND ECONOMIC STATISTICS I (3) PR: MTH 211. College Algebra or equivalent. Description of sample data; calculation of probabilities; frequency functions of random variables; the binomial and normal distributions; sampling theory and estimation; tests of hypotheses; elements of Bayesian decision theory.

ECO 3101 (ECN 301): INTERMEDIATE PRICE THEORY (5) PR: ECO 201-202. Advanced analysis of supply and demand as related to competition and monopoly; application of economic theory to product pricing and resource pricing.


ECP 3203 (ECN 311): LABOR ECONOMICS (4) PR: CI. History of the trade union movement; economic analysis of trade union philosophies and practices; examination of basic influences affecting labor force, real wages and employment; collective bargaining and labor law.

ECO 3203 (ECN 323): INTERMEDIATE INCOME AND MONETARY ANALYSIS (5) PR: ECO 201-202. An advanced exposition of the neo-Keynesian analysis explaining the determination of income, employment, prices, and the interest rate. Emphasis is placed upon the interaction of aggregate demand, as determined by consumption, investment, money, and the government budget, and aggregate supply.

ECO 3411 (ECN 331): BUSINESS AND ECONOMIC STATISTICS II (5) PR: MTH 211. College Algebra or equivalent and ECO 231.

Theory and use of statistical inference for decision and prediction. Point and interval estimation; criteria for choosing estimators and decision rules; hypotheses tests and prob values; analysis of variance; correlation and regression.

ECP 3433 (ECN 341): ECONOMICS OF TRANSPORTATION (4) Functions of transportation agencies, rate structure of transportation companies, problems of state and federal regulations and coordination of transportation facilities.


ECO 3622 (ECN 371): AMERICAN ECONOMIC HISTORY (4) The growth and evolution of American economic institutions from Colonial times to the present.

ECP 3613 (ECN 373): ECONOMICS OF THE URBAN ENVIRONMENT (5) PR: CI. Economic analysis of the phenomena of cities as well as urban social problems including poverty, discrimination, housing, transportation, pollution, crime and fiscal considerations.

ECP 4033 (ECN 401): HISTORY OF ECONOMIC THOUGHT (5) PR: ECO 201-202, 301, or CI. The development of the economic schools (Scholasticism, Mercantilism, Physiocracy, Classicism, Utopian Socialism, Anarchism, Marxism, Historicism, Marginalism, Neo-Classicism, Institutionalism, and Keynesianism) in connection with their philosophical and political convictions in relation to their times.

ECP 4401 (ECN 404): INTRODUCTION TO MATHEMATICAL ECONOMICS (4) PR: MTH 212, ECO 201-202 and ECO 331 or CI. Economic processes expressed as equations and economic systems as mathematical models. Investigation of their static and dynamic properties by mathematical analysis and computer simulation. (Formerly ECP 361.)

ECS 4003 (ECN 405): COMPARATIVE ECONOMIC SYSTEMS (4) Analysis of the major types of economies in industrially developed countries: competitive capitalism (e.g.; West Germany), regulated capitalism (e.g.; France), "command" communism (e.g.; the Soviet Union) and "worker-controlled" communism (e.g.; Yugoslavia). Each is subject to economic evaluation with particular reference to their ability to meet changing consumer demands and technological innovations.

ECP 4323 (ECN 407): MARXIST POLITICAL ECONOMY (4) PR: ECO 201 and 202 or CI. An examination of the Marxist tradition and other "left" perspectives in economics. Application of Marxist economic theory to problems of advanced capitalist and socialist societies.

ECP 4232 (ECN 410): COLLECTIVE BARGAINING (5) PR: ECO 311. The administration of labor-management arguments, mediation and arbitration of industrial disputes and governmental role in collective bargaining. (Formerly ECP 313.)
This course is intended for students with no previous courses in economics and no credit towards degrees will be received in the graduate programs of the College of Business.

**ECO 5204 (ECN 502) MACROECONOMICS**
PR: ECN 501. An accelerated introduction to the understanding of the post-Keynesian system through the development of a theoretical supply and demand model and the application of this model to the fiscal and monetary possibilities inherent within it. This course is intended for students with no previous study in economics and no credit towards degrees will be received in the graduate programs of the College of Business.

**ECO 5413 (ECN 503) STATISTICS FOR BUSINESS**
PR: ECN 231 and College Algebra. Statistical inference and decision theory applied to problems of business management.

**ECP 5510 (ECN 507) ECONOMIC EDUCATION I**
Basic economic processes affecting price determination, income distribution, national income and employment, growth, price levels, and balance of payments. This course is essentially designed for inservice teaching personnel.

**ECP 5511 (ECN 508) ECONOMIC EDUCATION II**
Basic economic processes affecting price determination, income distribution, national income and employment, growth, price levels, and balance of payments. This course is essentially designed for inservice teaching personnel.

**ECP 5512 (ECN 509) ECONOMIC EDUCATION III**
This course will be concerned with current economic problems. Emphasis will be placed on an analysis of those topical problems which secondary social science teachers would find particularly important to include in their courses. This course is essentially designed for inservice teaching personnel.

**ECP 5403 (ECN 519) INDUSTRIAL ORGANIZATION I—STRUCTURE**
PR: ECN 201 and 202, or equivalent. Extent, level, trends and dimensions of economic concentration; competitive conduct of large enterprises; causal factors underlying changes in industrial structure; technology, managerial economies and diseconomies, invention and innovation, and mergers.

**ECP 5404 (ECN 520) INDUSTRIAL ORGANIZATION II—CONDUCT AND BEHAVIOR**
PR: ECN 301 and ECN 519. Non-price competition, predatory practices, government intervention; oligopolistic pricing; differences from competitive pricing, standards of, constraints upon, effects on income distribution, production and government policy.

**ECP 5408 (ECN 531) ECONOMIC PROGRAMMING AND CONTROL**

**ECP 5424 (ECN 561) ECONOMETRICS**
PR: ECN 301, 323, 331, or Cl. Theory and use of multiple regression to explain, forecast and influence economic behavior. Applications to demand, cost and production functions. Model specification. Ordinal least squares and instrumental variables methods. Analysis of errors. BMD and TSP computer programs. Design and conduct of individual empirical research projects.

**ECP 5614 (ECN 573) URBAN ECONOMICS**
PR: ECN 201-202 or ECN 501-502. The economics of urban areas including analysis of their growth and development as well as intra-urban location patterns. Economic analysis at an advanced level of urban social problems.
The second number (in parentheses) is the USF Course Number

**EDUCATION**


**ECP 6705 (ECN 611) ADVANCED MANAGERIAL ECONOMICS**
PR: ECP 201-202 or 501-502, GBA 603 or equivalent. Advanced study of decision-making in households, firms and not-for-profit institutions. Topics cover demand, production and cost, organizational goals, efficiency vs. effectiveness, environmental influences on decision-making. Both problems of analysis and measurement are emphasized.

**ECO 6436 (ECN 612) ADVANCED BUSINESS FLUCTUATION AND ECONOMIC FORECASTING**
PR: ECP 201-202 or ECP 501-502, GBA 605. May be waived by instructor. Applications of statistical techniques to forecasting aggregate business activity, GNP and GNP components. Critical analysis of forecasting techniques and applications of forecasting methods to business decisions.

**ECP 6230 (ECN 614) LABOR RELATIONS LAW**
A survey of the various legal constraints applicable to the employer-employee relationship. Included are such areas as collective bargaining, civil rights, and fair labor standards. (Also offered as MAN 614.)

**ECO 6506 (ECN 623) PUBLIC FINANCE I**
PR: ECP 201-202 or 501-502 or equivalent. An examination of the role of the public sector and its contribution to economic welfare. Tax and expenditure policies are examined in relation to their effects on resource allocation and income distribution.

**ECO 6507 (ECN 624) PUBLIC FINANCE II**
PR: ECP 623. Topics in public economics including cost functions for public goods, redistributive techniques, fiscal federalism, major issues in government expenditures, environmental policies, stabilization, growth and debt policy.

**ECO 6216 (ECN 625) MONETARY THEORY**
PR: ECP 605, 607. Advanced discussion of the impact of the financial sector upon real economic magnitudes. The course emphasizes theoretical and empirical contributions found in the current literature as an extension of earlier work done in the field of monetary theory.

**ECO 6917 (ECN 681) DIRECTED RESEARCH**
PR: GR. Master's level. Repeatable. (S/U only.)

**ECO 6936 (ECN 683) SELECTED TOPICS IN ECONOMICS**
PR: Graduate standing and CC. The course content will depend on student demand and instructor's interest.

**ECO 6906 (ECN 697) INDEPENDENT STUDY**
(var.) Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

**ECO 6971 (ECN 699) THESIS: MASTER'S**
(var.) Repeatable. (S/U only.)

**ECO 6915 (ECN 605) MICRO-ECONOMICS**
PR: ECP 201-202 or ECP 501-502. An intensive study of microeconomics examining the behavior of consumers, and producers. Topics covered include the general concept of scarcity and conceptual models in the areas of demand, production, cost, and the firm and market organization. Advanced readings in theoretical and applied microeconomics will be emphasized.

**ECP 6006 (ECN 608) APPLIED ECONOMIC ANALYSIS**
PR: ECP 605, 607. Application of micro and macro economic analysis to problems of policy and procedure in business and government.

**ECP 6206 (ECN 610) MANPOWER ECONOMICS SEMINAR**
PR: ECP 201-202, 501-502, or CI. This course is designed to provide the student with a background in labor force statistics, labor institutions, and problems of employment and unemployment. This background then allows for further study of
The first number is the State Common Course Number

ARE 6844 (EDA 660) HISTORICAL AND PHILOSOPHICAL FOUNDATION OF ART EDUCATION
Past and contemporary philosophies and practices in art education.

ARE 6262 (EDA 661) ADMINISTRATION AND SUPERVISION OF ART EDUCATION
Principles of administration and supervision of art programs in the school.

ARE 6706 (EDA 682) RESEARCH SEMINAR IN ART PROGRAM
PR: EDA 660 or CI. Literature and research in art education. Various approaches to problem solving and evaluation with emphasis on individual research.

ARE 6944 (EDA 698) FIELD WORK IN ART EDUCATION
For students with degree-seeking status. Supervised participation in activities related to art education in community centers, non-school arts program, planned workshop and research.

Curriculum (EDC)

EDG 1300 (EDC 101) INTRODUCTION TO TEACHING
PR: Freshman only or CI. The people with whom teachers work, the types of tasks they perform and the challenges they can anticipate. Observation of teaching at several grade levels. (S/U only.)

EDG 4200 (EDC 401) CURRICULUM AND INSTRUCTION
PR: EDF 305 and 307, and admission to a teacher education program. Structure and purposes of curriculum organization with special emphasis on the quality of curriculum. Students enrolled in EDC 401 are required to spend six hours a week in public schools as pre-interns in addition to regular class hours.

EDG 4905 (EDC 480) DIRECTED STUDY
PR: Senior standing. To extend competency in teaching field. Offered only as a scheduled class.

EDG 4910 (EDC 481) INDIVIDUAL RESEARCH
PR: Senior standing and consent of program coordinator.

EDG 4901 (EDC 485) DIRECTED READINGS
May be repeated for a total of 4 quarter hours.

EDG 4905 (EDC 497) INDEPENDENT STUDY
PR: CI. Specialized independent study determined by the students' needs and interests. May be repeated when subjects vary. (S/U only.)

EDG 4936 (EDC 498) SENIOR SEMINAR IN EDUCATION
PR: Senior standing. Synthesis of teacher candidate's courses in his complete college program. Required concurrently with internship.

EDG 4940 (EDC 499) INTERNSHIP
One full quarter of internship in a public or private school. Intern takes Senior Seminar in Education concurrently. In special programs where the internship experience is distributed over two or more quarters, students will be registered for credit which accumulates to 12 quarter hours. (S/U only.)

EDG 5691 (EDC 501) CURRICULUM AND INSTRUCTION: ELEMENTARY OR SECONDARY
Curriculum scope, sequence and interrelationships, with a critical evaluation of current trends.

EDE 5391 (EDC 552) CREATIVE PROBLEM SOLVING FOR THE CHILD
Exploration of the concept of creativity, its factors, measurement, and application to education. Opportunities are given to work with children in a laboratory setting and to prepare materials to be used with small groups of children.
LAE 5131 (EDC 557) CURRICULUM PLANNING AND DEVELOPMENT IN SECONDARY ENGLISH (4)
PR: Certification in English or Mass Communications. Examination of new curriculum policies and procedures relating to the teaching of English in the secondary school.

LAE 5137 (EDC 559) CURRICULUM EVALUATION IN SECONDARY ENGLISH (4)
PR: Certification in English or Mass Communications. Examination of new evaluation policies and procedures relating to curricula in English in the secondary school.

EDG 5925 (EDC 585) EDUCATION WORKSHOP (1-5)
Professional in-service workshop in various areas of education. May be repeated when subjects differ. Not normally used in degree programs. (S/U only.)

EDG 6205 (EDC 601) THEORETICAL ISSUES IN CURRICULUM AND INSTRUCTION (4)
PR: 8 quarter hours at the graduate level in the Foundations areas. Open only to degree-seeking graduate students. Advanced study of basic concepts and their practical application. Persistent issues and problems and development of rationale for their examination.

EDS 6050 (EDC 661) PRINCIPLES OF EDUCATIONAL SUPERVISION (5)
PR: Courses in general curriculum. Instructional leadership with emphasis on organization for curriculum improvement and in-service growth for professional school personnel.

EDA 6061 (EDC 671) PRINCIPLES OF EDUCATIONAL ADMINISTRATION (5)
Educational administration as a profession. Consideration is given to organization, control, and support of the educational system.

EDA 6232 (EDC 673) SCHOOL LAW (4)
Basic essentials of school law, a review of court decisions affecting American education, with emphasis upon the study of Florida State Statutes as they pertain to the question of Florida public schools.

EDA 6931 (EDC 674) CASE STUDIES IN SCHOOL ADMINISTRATION (4)
PR: Consent of the program and/or EDC 671. Case studies presented are designed to help prospective administrators think through various administrative problems, identify feasible solutions, and critically examine the decisions that are made. The skill of decision making is an integral focus of the course.

EDA 6242 (EDC 675) SCHOOL FINANCE (4)
PR: EDC 671 or CI. Support of public education by local, state, federal sources, with emphasis on Florida; funding for equal educational opportunity; budgeting methods.

EDG 6945 (EDC 680) ADMINISTRATION PRACTICUM (4-10)
PR: Completion of a significant amount of the student's program. Field experiences in school systems for the purpose of identifying and analyzing educational problems. Application of concepts developed in the student's program to the solution of these problems. (Formerly EDC 695.)

EDA 6940 (EDC 681) DIRECTED RESEARCH (var.)
PR: GR. Master's level. Repeatable. (S/U only.)

EDA 683 (EDC 683) SELECTED TOPICS IN EDUCATION (1-5)
PR: Graduate Standing and CI. Each topic is a course under the supervision of a faculty member. The title and content will vary according to the topic.

EDG 6251 (EDC 685) SCHOOL CURRICULUM IMPROVEMENT (4)
Workshop for the improvement of the curriculum of an elementary or secondary school. Open only to teachers in service. Complete faculty participation required.

ESE 6306 (EDC 689) SUBJECT SPECIALIZATION PLANNING SECONDARY (4)
Individually planned course in a secondary school subject area for in-service teachers.

EDG 6947 (EDC 691) INTERNSHIP (1-9)
PR: CI. Open to graduate degree candidates only. Supervised teaching at the secondary or junior college level as appropriate. (S/U only.)

EDA 6906 (EDC 697) INDEPENDENT STUDY (var.)
Independent study in which students must have a contract with an instructor. Repeatable. (S/U only.)

EDA 6971 (EDC 699) THESIS: MASTER'S (var.)
Repeatable. (S/U only.)

EDA 7910 (EDC 781) DIRECTED RESEARCH (var.)
PR: GR. Ph.D. level. Repeatable. (S/U only.)

EDA 7931 (EDC 783) SELECTED TOPICS (1-5)
PR: CC. Selected topics in advanced Education. May be repeated for credit to a maximum of 15 hours.

EDA 7937 (EDC 791) GRADUATE SEMINAR (1-5)
PR: CC. Seminar in advanced Education. May be repeated for credit to a maximum of 15 hours.

EEX 7980 (EDC 799) DISSERTATION: DOCTORAL (var.)
PR: Must be admitted to Doctoral Candidacy. Repeatable. (S/U only.)

Elementary Education (EDE)

ECC 2001 (EDE 201) INTRODUCTION TO EARLY CHILDHOOD EDUCATION (4)
An overview of early childhood education with emphasis on its historical development, current theories, and practices.

EDE 409 through EDE 440 open only to upper-level majors in Early Childhood, Elementary, or Exceptional Child Education.

RED 4310 (EDE 409) READING FOR THE CHILD (5)
PR: Admission to College of Education and EDF 305. Pre-reading, word recognition, comprehension and basic study skills and various reading approaches and reading interests; in-school work required.

LAE 4314 (EDE 411) LANGUAGE ARTS FOR THE CHILD (4)
PR: Admission to College of Education. Speaking, writing,
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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAE 4414</td>
<td>LITERATURE FOR THE CHILD</td>
<td>4</td>
<td>Admission to College of Education. History and development of children's literature. Study of bibliographic sources, criteria and techniques for selection and use.</td>
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<tr>
<td>MAE 4314</td>
<td>ARITHMETIC FOR THE CHILD</td>
<td>5</td>
<td>Admission to College of Education and MTH 331, 332, or equivalent. Methods of teaching elementary school mathematics.</td>
</tr>
<tr>
<td>SCE 4310</td>
<td>SCIENCE FOR THE CHILD</td>
<td>5</td>
<td>Admission to College of Education and completion of General Distribution Requirement biological or physical science in sequence. Techniques and materials for teaching science in the elementary school.</td>
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<tr>
<td>SSE 4313</td>
<td>SOCIAL STUDIES FOR THE CHILD</td>
<td>5</td>
<td>Admission to College of Education and completion of General Distribution Social Sequence. Significant concepts in the subjects concerned with human relationships. Emphasis upon teaching pupils to solve rather than be engulfed by social problems.</td>
</tr>
<tr>
<td>ARE 4313</td>
<td>ART FOR THE CHILD</td>
<td>4</td>
<td>Admission to College of Education. Art and the intellectual, creative, emotional, and aesthetic growth of children.</td>
</tr>
<tr>
<td>MUE 4313</td>
<td>MUSIC FOR THE CHILD: SKILLS</td>
<td>2</td>
<td>Admission to College of Education. Voice production, music reading, creative composition and some instrumenal experience. School song materials used to support this work.</td>
</tr>
<tr>
<td>MUE 4311</td>
<td>MUSIC FOR THE CHILD: METHODS</td>
<td>3</td>
<td>Admission to College of Education &amp; EDE 423. Music Literature and teaching aids for children including singing, rhythmic, creative, instrumental and listening experiences and their presentation.</td>
</tr>
<tr>
<td>HLP 4460</td>
<td>HEALTH AND PHYSICAL EDUCATION FOR THE CHILD</td>
<td>4</td>
<td>Admission to the College of Education. A study of the importance of movement competency and its contribution to the development of a positive self-concept in children; content and methodology for developing appropriate movement experiences for children; content and methodology for teaching elementary health science.</td>
</tr>
<tr>
<td>EEC 4303</td>
<td>CREATIVE EXPERIENCES IN EARLY CHILDHOOD EDUCATION</td>
<td>4</td>
<td>Admission to College of Education. The development of the child's creative expression through art, music, dance, play, and drama; included are the materials content, and teaching techniques.</td>
</tr>
<tr>
<td>EEC 4203</td>
<td>PROGRAMS IN EARLY CHILDHOOD EDUCATION</td>
<td>5</td>
<td>Admission to College of Education. A study of school programs for children ages 3-8. Analysis and evaluation of these programs in the light of the most effective current classroom practices. Observation and participation included. (Formerly EDE 529.)</td>
</tr>
<tr>
<td>EEC 4706</td>
<td>LANGUAGE AND LEARNING IN EARLY CHILDHOOD</td>
<td>4</td>
<td>Admission to College of Education. The study of the acquisition of language in young children and the development of basic communications skills in the Language Arts Curriculum, infancy through age 8 years. (Formerly EDE 531.)</td>
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<tr>
<td>EDE 4301</td>
<td>TEACHING METHODS IN THE ELEMENTARY SCHOOL</td>
<td>4</td>
<td>Admission to the College of Education. Suggested corequisite: EDC 401. Process of teaching elementary school subjects. To be taken quarter prior to internship. Six hours per week as pre-intern in public schools required.</td>
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**MAE 4545 (EDE 445)**  DIAGNOSIS AND TREATMENT OF LEARNING DISABILITIES IN SCHOOL MATHEMATICS

- PR: EDE 415 or equivalent. Presentation and analysis of teaching methods and models appropriate for use with children experiencing learning disabilities in mathematics; supervised conduct of a case study. (Formerly EDE 515.)

**EED 4500 (EDE 519)**  SOCIAL GROWTH IN CHILDHOOD

- PR: Admission to College of Education. A study of the principal factors which influence the social development of young children with particular emphasis upon those cultural influences which affect both child development and the educational programs for the young child.

**EED 5705 (EDE 527)**  DEVELOPMENTAL PROCESSES IN EARLY CHILDHOOD

- PR: Admission to College of Education. The normal processes of development among children ages 3-8, the relation between these characteristics and the curriculum: child study through observation required.

**EED 5926 (EDE 539)**  WORKSHOP IN EARLY CHILDHOOD EDUCATION

- PR: Admission to College of Education. Individual problems and innovations related to the methods and materials of instruction in the early childhood grades.

**LAE 5325 (EDE 551)**  TEACHING METHODS IN THE MIDDLE SCHOOL—ENGLISH LANGUAGE ARTS

- PR: CI. Analysis of nature and communication needs of students in grades 5-8 with emphasis on laboratory methods of teaching language.

**EDG 6935 (EDE 603)**  SEMINAR IN CURRICULUM RESEARCH

- PR: EDF 607. Critical evaluation of current research and curriculum literature, design and analysis of individual research topics leading to satisfaction of research requirements.

**RED 6116 (EDE 609)**  TRENDS IN READING IN THE ELEMENTARY SCHOOL

- PR: EDE 409 and EDR 430. Extensive study of recent trends in materials, approaches, and procedures in teaching reading in the elementary school.

**LAE 6616 (EDE 611)**  TRENDS IN LANGUAGE ARTS INSTRUCTION

- PR: EDE 411 and 413. Advanced materials and processes of instruction in elementary school language arts programs.

**ARE 6248 (EDE 613)**  CREATIVE ARTS INSTRUCTION

- Creative processes in the teaching of visual arts, music, dance, and drama to elementary school pupils.

**MAE 6116 (EDE 615)**  TRENDS IN MATHEMATICS INSTRUCTION

- PR: EDE 415 or equivalent. Philosophy, content and process of qualitative instruction in modern mathematics in elementary school programs.

**SCE 6616 (EDE 617)**  TRENDS IN SCIENCE INSTRUCTION

- PR: EDE 417. Topics in the biological and physical sciences appropriate for teaching in excellent elementary school programs. Analysis of modern curriculum materials used in presenting science as a process of inquiry.

**SSE 6617 (EDE 619)**  TRENDS IN SOCIAL STUDIES INSTRUCTION

- PR: EDE 419. Crucial concepts drawn from the social sciences. Analysis of the problems approach. Students will select an area of independent study on an advanced level.

**ARE 6388 (EDE 621)**  ART FOR THE ELEMENTARY SCHOOL TEACHER

- Exploration of various materials and techniques in rela-
tionship to current theories about art and the intellectual, creative, emotional and aesthetic growth of children.

**ECT 6261 (EDS 629) ADVANCED PROGRAMS IN EARLY CHILDHOOD EDUCATION**
PR: EDE 429, EDF 605 or CI. A study of innovative curriculum designs in Early Childhood Education, with emphasis given to related research.

**LAE 6415 (EDT 631) CHILDREN'S LITERATURE IN THE ELEMENTARY CLASSROOM**
PR: EDE 413, CI. A study of significant concepts, emerging trends and classroom techniques for implementation and utilization of children's literature in all areas of the curriculum.

**ECE 6405 (EDS 639) HOME-SCHOOL-COMMUNITY INTERACTION IN EARLY CHILDHOOD EDUCATION**
PR: EDE 402, EDF 605 or CI. An intensive study of the roles of parents, teacher aides, and community agencies involved in the education of the young child.

**EDS 6142 (EDT 641) PROBLEMS IN SUPERVISION**
PR: EDF 607 or equivalent and EDC 611. Problems in supervising for curriculum improvement within the elementary school.

**MAE 6548 (EDT 645) ADVANCED DIAGNOSIS AND TREATMENT OF LEARNING DISABILITIES IN SCHOOL MATHEMATICS**
PR: EDE 415 or equivalent. Study of the symptoms etiologies and consequences of children's learning disabilities in mathematics; study and guided application of theoretical models used in diagnosis and treatment; supervised conduct of a case study. (Formerly EDE 515.)

**MAE 6949 (EDT 646) ADVANCED PRACTICUM IN DIAGNOSIS AND TREATMENT OF CHILDREN'S LEARNING DISABILITIES IN MATHEMATICS**
PR: EDE 465. Supervised conduct of a case study with a childhood experiencing learning difficulties in mathematics. Procedures used and reporting practice employed developed in EDE 645 reviewed and extended. (Formerly EDE 516.)

**LAE 6617 (EDT 651) THEORIES AND PATTERNS OF ADVANCED LANGUAGE ARTS INSTRUCTION**
PR: EDE 611 or equivalent. This course is organized to present new research findings and theories relating to language patterns and contemporary programs designed for teaching the language arts.

**LAE 6746 (EDT 652) APPLICATIONS OF THEORIES TO THE DEVELOPMENT OF LANGUAGE ARTS PROGRAMS**
PR: EDE 611 or equivalent, EDE 651. This course is designed to apply research findings and theories for developing and organizing instructional improvement of the language arts.

**EDE 6515 (EDS 687) SUBJECT SPECIALIZATION PLANNING: ELEMENTARY**
Individually planned course in an elementary school subject area for in-service teachers.

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**Exceptional Child Education (EDS)**

**EEX 3010 (EDS 311) EXCEPTIONAL CHILDREN AND YOUTH**

**EMR 3011 (EDS 322) INTRODUCTION TO MENTAL RETARDATION**
PR: EDS 311. Introduction to the classification, diagnosis, characteristics, and treatment of the mentally retarded.

**EMR 3800 (EDS 329) UNDERGRADUATE SUPERVISED PRACTICUM IN MENTAL RETARDATION**
PR: EDS 322 and major in Mental Retardation. Supervised Practicum experiences in the educational, social and vocational programming for mentally retarded individuals. A one hour per week Seminar is required concurrently.

**EGI 3011 (EDS 350) INTRODUCTION TO GIFTED CHILDREN**
PR: Junior class standing. Diagnoses, characteristics, and educational provision of the gifted and talented.

**EGI 3941 (EDS 359) FIELD WORK WITH GIFTED CHILDREN**
Organized, supervised experiences with gifted children. Specific experiences may be either a combination of observation and classroom techniques for implementation and utilization of children's literature in all areas of the curriculum.
and assistance with gifted children or individualized projects.

**EDS 4221** (EDS 411) EDUCATIONAL ASSESSMENT OF EXCEPTIONAL CHILDREN (4)
PR: EDF 305, EDS 311, EDS 322 or EDS 431 or EDS 481 and an Exceptional Child Education major. Introduction to and familiarization with formal and informal techniques used to measure and evaluate all exceptional children. The interpretation of information so derived for utilization in educational programming and individualization of instruction. Lecture. Lab.

**EMR 4310** (EDS 423) PROCEDURES AND MATERIALS FOR ELEMENTARY AGE EDUCABLE MENTALLY RETARDED CHILDREN (4)
PR: EDS 322 and an Exceptional Child Education major. Special class organization, curriculum development, procedures and materials for elementary age educable mentally retarded children.

**EMR 4321** (EDS 424) EDUCATIONAL PROCEDURES FOR THE TRAINABLE MENTALLY RETARDED (4)
PR: EDS 322 and an Exceptional Child Education major. Special class organization, curriculum development, procedures and materials for trainable mentally retarded children.

**EMR 4313** (EDS 425) PROCEDURES AND MATERIALS FOR SECONDARY AGE EDUCABLE MENTALLY RETARDED YOUTH AND ADULTS (4)
PR: EDS 322 and an Exceptional Child Education major. Special class organization, curriculum development, procedures and materials for secondary age educable mentally retarded youth and adults.

**EED 4011** (EDS 431) BEHAVIOR DISORDERS IN THE SCHOOLS (4)
PR: EDF 305, EDS 311, or CI. Survey of emotional and social disorders in children and youth manifested as behavior problems in the classroom; intervention techniques; implications for management techniques in educational programs.

**EED 4321** (EDS 432) EDUCATIONAL PROGRAMMING FOR CHILDREN AND YOUTH WITH BEHAVIOR DISORDERS (5)
PR: EDF 305, EDS 311, EDS 411, EDS 431. Acceptance in Program for Emotional Disturbance. Methods and techniques for teaching children and youth with behavior disorders; individualization of instruction; planning and implementation of educational programs; precision teaching and behavior modification techniques as applied to the education of children and youth with behavior disorders.

**EED 4941** (EDS 439) UNDERGRADUATE SUPERVISED PRACTICUM IN BEHAVIOR DISORDERS (1-10)
PR: Acceptance in undergraduate program for Emotionally Disturbed. Supervised undergraduate practicum experiences with children and youth with behavior disorders. A one hour per week Seminar is required concurrent with practicum.

**EGI 4231** (EDS 451) EDUCATION PROCEDURES FOR THE GIFTED (4)
PR: Junior class standing, EDS 350. Curriculum adjustment, methods, and techniques appropriate for the education of gifted children. Supervised experiences exploring creative techniques and the development of innovative teaching techniques will be provided.

**ELD 4011** (EDS 481) THEORIES IN SPECIFIC LEARNING DISABILITIES (4)
PR: EDS 311. Characteristics, needs and abilities of children with specific learning disabilities. Emphasis is on theories, issues, trends, and philosophy of problems for such children.

**ELD 4110** (EDS 482) SKILLS IN DIAGNOSIS AND INSTRUCTION FOR CHILDREN WITH SPECIFIC LEARNING DISABILITIES (4)
PR: EDS 481 and an Exceptional Child Education major. Structural diagnosis and individualizing instruction for children with specific learning disabilities.

**EDS 489** UNDERGRADUATE SUPERVISED PRACTICUM IN SPECIFIC LEARNING DISABILITIES (6)
PR: EDS 311, EDS 481, EDS 482 and major in Specific Learning Disabilities. Supervised practicum experiences in classes for children with specific learning disabilities. (Formerly EDS 489.)

**EMR 5012** (EDS 511) THE SLOW LEARNER IN THE SCHOOL (4)
Characteristics, needs and educational planning for the slow learning child. Appropriate for special class teachers and regular class teachers.

**EMR 5803** (EDS 529) GRADUATE SUPERVISED PRACTICUM IN MENTAL RETARDATION (1-14)
Supervised graduate practicum encompassing teaching and supervising experiences in public school classes for the mentally retarded.

**EDG 5734** (EDS 541) THE CULTURALLY DISADVANTAGED AND THE SCHOOLS (4)
Characteristics and needs of the culturally disadvantaged and their implications for educational programming.

**EGI 5051** (EDS 550) NATURE AND NEEDS OF THE GIFTED (4)
Characteristics and educational needs of gifted children and youth.

**EGI 5232** (EDS 551) EDUCATIONAL PROCEDURES FOR THE GIFTED (4)
PR: EDS 550 or CI. Curriculum adjustments, methods and techniques, classroom organization necessary for teaching the gifted.

**EGI 5942** (EDS 559) SUPERVISED PRACTICUM FOR THE GIFTED (1-14)
Planned supervised participation in activities related to specific areas of the gifted.

**EVI 5311** (EDS 560) THE VISUALLY HANDICAPPED IN THE CLASSROOM (4)
PR: EDS 311 and CI. The visually handicapped in the classroom, structure, hygiene and educational implications.

**EPI 5051** (EDS 561) EDUCATIONAL PROBLEMS OF THE PHYSICALLY HANDICAPPED (4)
PR: EDS 311 or CI. Introduction to the educational, psychological and social problems of the physically disabled child in the public schools.

**EPI 5321** (EDS 562) TEACHING THE CEREBRAL PALSYED CHILD (4)
PR: EDS 311 or CI. Introduction to the educational, psycho-educational aspects of cerebral palsy and its implications for classroom teachers.

**EEX 6936** (EDS 610) SEMINAR IN EXCEPTIONAL CHILD EDUCATION (4)
A critical survey of the literature related to the psychological, sociological, and education problems of exceptional children.

**EEX 6201** (EDS 611) PSYCHO-EDUCATIONAL APPRAISAL OF EXCEPTIONAL CHILDREN (4)
PR: EDS 311 or EDS 610, EDS 411, EDF 605. Educational planning for exceptional children based on diagnostic information. Includes both lecture and practicum experiences in evaluative and instructional techniques for exceptional children.

**EEX 6510** (EDS 612) SUPERVISION OF EXCEPTIONAL CHILD PROGRAMS (4)
PR: CI. Principles of supervision and their application to exceptional child education.

**EEX 6511** (EDS 613) ADMINISTRATION OF EXCEPTIONAL CHILD PROGRAMS (4)
PR: CI. Procedure which local, state, and national adminis-
trators may use to implement services for exceptional children.

EMR 6932 (EDS 620) BIOLOGICAL ASPECTS OF MENTAL RETARDATION (4) PR: EDS 322 or CI. The contribution of biological factors towards the causation of mental deficiency; implications for casefinding, care, and education.

EEX 6934 (EDS 621) SOCIOLOGICAL AND EDUCATIONAL ASPECTS OF MENTAL RETARDATION (4) PR: EDS 311 or EDS 610. Evaluation of relevant literature.

EEX 6303 (EDS 622) ADVANCED EDUCATIONAL PROCEDURES FOR THE MENTALLY RETARDED (4-8) PR: EDS 423 or EDS 424. Specific curriculum and methodological problems in teaching the retarded.

EEX 6935 (EDS 623) CURRENT TRENDS AND ISSUES IN THE EDUCATION OF THE MENTALLY RETARDED (4) Survey of current trends and issues related to the education of the mentally retarded.

EED 6201 (EDS 631) EDUCATIONAL IMPLICATIONS OF PATHOLOGICALLY DISTURBED CHILDREN AND YOUTH (4) PR: EDS 431. In depth survey of mild, moderate, and severe behavioral pathologies of children and youth. Includes such topics as autism, schizophrenia, and other neurotic and psychotic disorders. Guided exploration of exemplary services, and methodologies.

EED 6221 (EDS 632) MANAGEMENT METHODS AND TECHNIQUES FOR DISTURBED CHILDREN IN AN EDUCATIONAL SETTING (4) PR: EDS 631 or EDF 635, graduate standing. Management methods with disturbed children in an ongoing educational setting. Includes behavior modification, reality therapy, psychodynamic interventions, and humanistic approaches. Basic evaluation techniques of intervention strategies, including Precision Teaching, are covered. Practical applications are stressed.

EED 6211 (EDS 633) EDUCATIONAL PROGRAMMING FOR EMOTIONALLY DISTURBED CHILDREN (4) PR: Acceptance in Masters Degree Program in Emotional Disturbance, EDS 611, EDS 631, EDS 632. Advanced methods and materials in planning and implementing appropriate educational interventions with disturbed students.

EDG 6946 (EDS 649) FIELD WORK WITH POTENTIALLY HANDICAPPED (CULTURALLY DISADVANTAGED) (1-9) Teaching and participation in activities related to teaching disadvantaged young children (N-3).

EGI 6936 (EDS 653) SEMINAR IN EDUCATION OF THE GIFTED: RECENT RESEARCH (4) A critical survey of the literature related to the psychological and educational problems of gifted children.

EGI 6937 (EDS 654) SEMINAR IN EDUCATION OF THE GIFTED: PROGRAMS (4) A survey of existing programs for the gifted and evaluation of relevant literature. Individual students will plan and present a model program for the gifted.

ELD 6141 (EDS 680) CURRENT TRENDS AND ISSUES RELATED TO EDUCATING SPECIFIC LEARNING DISABILITIES CHILDREN (4) PR: CI. Trends and issues related to educating children with specific learning disabilities. (Formerly EDS 681.)

ELD 6115 (EDS 682) ADVANCED ASSESSMENT AND PROCEDURES FOR SPECIFIC LEARNING DISABLED YOUNGSTERS (4) PR: CI. Concepts related to the assessment and teaching of specific learning disabled children.

EEX 7741 (EDS 700) PHILOSOPHY AND PROCESS IN THE PREPARATION OF SPECIALISTS IN EXCEPTIONAL CHILD EDUCATION (4) PR: Admission in the Program for E.D.S. and Ph.D. in Education. In depth exploration of the philosophy and theory in special education. A theoretical basis for the preparation of specialists in the field of exceptional child education.

EEX 7930 (EDS 710) SEMINARS IN EXCEPTIONAL CHILD EDUCATION (1-10) PR: Preliminary Admission to the Graduate Program and CI. Seminar Topics will vary to include neurophysiological mechanisms, current trends, issues, and curriculum development in Special Education. May be repeated for a maximum of 10 hours.

EEX 7341 (EDS 712) RESEARCH STUDIES AND THEIR IMPLICATIONS IN THE EDUCATION OF EXCEPTIONAL CHILDREN (5) PR: Admission in the Program for E.D.S. and Ph.D. in Education. May be repeated for a maximum of 8 hours.

EEX 7203 (EDS 714) EDUCATIONAL IMPLICATIONS OF PSYCHOSOCIAL ASPECTS OF EXCEPTIONAL CHILDREN (1-8) PR: CI. This course will be concerned with the identification of the psycho-social needs and characteristics of exceptional children. Opportunity will also be given to the analysis of the educational implications of these needs and characteristics. May be repeated for a maximum of 12 hours.
EDF 3214 (EDF 305) HUMAN DEVELOPMENT AND LEARNING
PR: General Psychology and admission to College of Education or CC. Application of respondent and operant learning principles to classroom learning, teaching models for different instructional goals, analysis of teacher behavior, microteaching.

EDF 3504 (EDF 307) SOCIAL FOUNDATIONS OF EDUCATION
PR: Admission to College of Education. Social, economic and political context within which schools function and the values which provide direction for our schools; the culture as a motivating influence in instruction. Should not be taken concurrently with EDF 305.

EDF 3542 (EDF 309) PHILOSOPHY OF EDUCATION
PR: Upper level standing. A critical analysis of selected philosophies of education in terms of their beliefs about the nature of man and society and their related assumptions about the nature of reality, knowledge and value.

EDF 3710 (EDF 311) COMPARATIVE EDUCATION
PR: Upper level standing. A comparison of contemporary educational systems of selected countries with that of the United States.

EDF 3554 (EDF 313) VALUES CLARIFICATION FOR TEACHERS
PR: Junior standing recommended. Techniques for teachers in identifying and analyzing values and value orientations of individuals and groups of students in the school.

EDF 3210 (EDF 377) EDUCATIONAL PSYCHOLOGY
PR: Upper Level standing. The application of behavioral principles to human behavior in educational institutions, home and community settings. May not be counted for EDF 305. (For non-education majors only.)

EDF 3228 (EDF 379) BEHAVIOR MODIFICATION TECHNIQUES
PR: EDF 305. Special techniques in behavior modification for children with learning difficulties. Minimum of two hours field experience per week required in addition to regular class hours.

EDF 4801 (EDF 444) WOMEN AND THE EDUCATIONAL PROCESS
PR: Junior standing recommended. Covers both the role women played in education in the U.S. and the way schools have helped to shape the role women play in American society. Topics include development of sex-role stereotypes through classroom interactions and curriculum materials, the status of women in public and higher education and laws affecting it, and the role of the schools in forming educational and career aspirations of girls and women. Emphasis will be placed on ways parents and teachers may counteract the sex-typing which schools, as they are currently structured, perpetuate. (Also offered as WSP 444.)

EDF 5136 (EDF 502) ADOLESCENCE
PR: One of EDF 305, 377. A study of the educational, intellectual, personality, physical, social and vocational factors in adolescence.

EDF 5672 (EDF 575) AMERICAN DEMOCRACY AND PUBLIC EDUCATION
PR: Junior standing recommended. Covers both the role women played in education in the U.S. and the way schools have helped to shape the role women play in American society. Topics include development of sex-role stereotypes through classroom interactions and curriculum materials, the status of women in public and higher education and laws affecting it, and the role of the schools in forming educational and career aspirations of girls and women. Emphasis will be placed on ways parents and teachers may counteract the sex-typing which schools, as they are currently structured, perpetuate. (Also offered as WSP 444.)

EDF 5285 (EDF 585) PROGRAMMED INSTRUCTION AND TEACHING MACHINES
PR: Principles for programming in the several academic subjects.

EDF 6311 (EDF 611) PSYCHOLOGICAL FOUNDATIONS OF EDUCATION
PR: EDF 605. Major types of educational research, with emphasis upon understanding the experimental method.

EDF 6211 (EDF 611) PSYCHOLOGICAL FOUNDATIONS OF EDUCATION
PR: EDF 605. Major types of educational research, with emphasis upon understanding the experimental method.

EDF 6120 (EDF 612) CHILD DEVELOPMENT
PR: EDF 611 or Cl. Educational, emotional, hereditary, intellectual, social and physical factors influencing child growth and development.

EDF 6215 (EDF 613) PRINCIPLES OF LEARNING
A consideration of several theories of learning and related research studies in regard to classroom application.

EDF 6213 (EDF 615) BIOLOGICAL BASES FOR LEARNING AND BEHAVIOR
PR: One course in Educational Psychology. A study of human biological development and its influence upon learning and behavior.

EDF 6143 (EDF 617) MEASUREMENT OF INDIVIDUAL INTELLIGENCE
PR: EDF 305 or 605 or equivalent and a course in educational measurement of statistics. Administration and interpretation of individual measures of intelligence. Students may not receive credit for both EDF 617 and PSY 617. Individual Intelligence Testing.

EDF 6006 (EDF 621) SOCIO-ECONOMIC FOUNDATIONS OF AMERICAN EDUCATION
Significant socio-economic factors as they relate to major problems facing American education.
EDF 6517 (EDF 623) HISTORICAL FOUNDATIONS
OF AMERICAN EDUCATION
(4)
Historical and comparative problems in American education which are relevant to contemporary issues.

EDF 6544 (EDF 625) PHILOSOPHICAL
FOUNDATIONS OF AMERICAN EDUCATION
(4)
Major philosophies of education which are relevant to an understanding of contemporary educational issues.

EDF 6712 (EDF 627) PROSEMINAR IN
COMPARATIVE EDUCATION
(4)
Contemporary policies and practices in education in selected countries of the world. Methodology in Comparative Education. Consideration will be given to needs and interests of individual students.

EDF 6354 (EDF 631) THEORIES OF
PERSONALITY FOR SCHOOL PERSONNEL
(4)
A comparative and integrated study of personality development according to major psychological theories. Application of the theoretical constructs to education and guidance.

EDF 6217 (EDF 635) BEHAVIOR THEORY AND
CLASSROOM LEARNING
(4)
PR: EDF 613 or CI. Theoretical and practical application of behavior modification. Will cover: Introduction into experimental methods, e.g., independent, dependent variables; and internal validity; principles of positive reinforcement; shaping and successive approximations; application of reinforcement (parameters); operant behavior under extinction; operant methods in behavior and development; readings in behavior modification—critical analysis; field work.

EDF 6805 (EDF 644) WOMEN AND EDUCATION
(4)
Course is designed to enable public school personnel, teachers, counselors, administrators and other professionals, to identity those aspects of public education which perpetuate sex role stereotyping. Emphasis will be placed on how the law and formal and informal affirmative action activities can be employed to correct sexism in schools.

EDF 6938 (EDF 671) SELECTED TOPICS
(2-4)
PR: CI. Exploration and demonstration of knowledge in an area of special interest to the student and/or in an area for which the student needs to demonstrate a higher level of competence. Defined to fit the needs of each student.

EDF 6944 (EDF 675) FIELD EXPERIENCE
(1-5)
PR: CI. Demonstrate skills in the practice of the student's specialty. Specific objectives will be defined according to the needs of the individual student.

EDF 7682 (EDF 701) EDUCATION IN
METROPOLITAN AREAS
(4)
PR: Graduate Standing; EDF 621, 623, or 625 or CI. An examination of the school as a formal, socializing institution in relation to the residential populations found within the metropolitan structure with specific reference to methodologies useful for educational planning. Topics will include an identification of the metropolitan concept; an analysis of metropolitan concept; an analysis of metropolitan forms, functions and dynamics; a study of socio-economic structure and ethnic composition of residential populations; and a discussion of the school as a metropolitan institution interacting with a spectrum of socio-economic and ethnic groups.

EDF 7610 (EDF 702) SCHOOL REFORM
(4)
PR: Graduate Standing; EDF 621, 623, or 625 or CI. An examination of the history, background, sources, dynamics and effects of attempts at school reform. Topics will include role of individuals, foundations, legislation, demography, politics, media, and technology as they relate to reform aims and strategies; distinctions between short term planning for change and the preparation of long-term future strategies.

EDF 7649 (EDF 703) ANALYSIS OF
EDUCATIONAL ISSUES
(4)
PR: Graduate Standing; EDF 621, 623, or 625 or CI. An examination and analysis of selected critical issues in public school.

Guidance (EDG)

EGC 4001 (EDG 401) INTRODUCTION TO
GUIDANCE
PR: Upper level standing. An introduction to the role and function of guidance, school psychology, social work and other pupil personnel services from kindergarten through junior college.

EGC 4053 (EDG 402) INTRODUCTION TO
STUDENT PERSONNEL WORK IN HIGHER
EDUCATION
PR: CI. Study of student personnel services in institutions of higher education. Identification of the needs of students and of the ways to respond to meet these needs. Survey of service units on a campus, in terms of structure, organization, funding and evaluation of each unit.

EGC 4660 (EDG 404) PROBLEMS IN RESIDENCE
HAND MANAGEMENT
PR: CI. In-depth study of problems related to residence hall living.

EGC 5034 (EDG 503) GUIDANCE IN
VOCATIONAL EDUCATION
(4)
PR: CI. Application of guidance theories and skills to the work of vocational educators. The guidance role of teachers and their relationships with counselors in providing guidance services.

EGC 5105 (EDG 529) COMPARATIVE GUIDANCE
(4)
PR: CI. Study of guidance theories and practices in selected foreign countries as compared with the American guidance model. Evaluation of foreign guidance through critical analysis of primary sources. For example: guidance philosophy and practice in countries of the Soviet Bloc. (Formerly EDF 629)

EGC 6005 (EDG 601) PRINCIPLES OF GUIDANCE
(5)
PR: CI. Required first course in specialization sequence for all guidance majors. Guidance as a profession; philosophic framework of the guidance program, its scope and place in the total educational context.

EGC 6305 (EDG 603) THE INFORMATIONAL
SERVICE IN GUIDANCE
(4)
PR: EDC 601. Occupational structure in the United States; sources and uses of educational, occupational, social and personal information; collecting, classifying and communicating such information.

EGC 6225 (EDG 609) THE APPRAISAL
PROCEDURES IN GUIDANCE
(5)
PR: EDF 605, EDC 601. A study of test and non-test techniques of appraisal with emphasis on the use of standardized test data in guidance programs and the use of the individual case study approach.

EGC 6625 (EDG 613) ORGANIZATION AND
ADMINISTRATION OF GUIDANCE SERVICES IN
ELEMENTARY SCHOOLS
(3)
PR: EDC 601. Organization of a guidance program in the elementary school, its relation to instruction and adminis-
Health Education (HEN)

HES 2000 (HEN 201) CONTEMPORARY HEALTH SCIENCE
A comprehensive approach to health concerns and problems in contemporary society, including methods of assessing individual health needs. (S/U only.)

HES 3300 (HEN 310) PROCESSES AND PROGRAMS IN HEALTH EDUCATION
PR: Admission to Health Education Program, or CI. Survey of programs in Health Education in the schools and community. Processes in programs and curriculum development will also be emphasized. (S/U only.)

HES 3120 (HEN 311) STRUCTURE AND FUNCTION OF THE HUMAN BODY
PR: Admission to Health Education Program, or CI. A study of the normal structure and function of the human body. Focus is on the relationship of structure, function, and health status. (S/U only.)

HES 3140 (HEN 321) HEALTH EDUCATION AND RELATED HEALTH SCIENCE CONTENT: CHILDREN
PR: Admission to the program or CI. Programs, curriculum, health services, and health education related to health needs and interests of children. (S/U only.)

HES 3190 (HEN 322) SEMINAR AND INTERNSHIP—CHILD HEALTH EDUCATION AND PROGRAMS
PR: Admission to program. Supervised field experiences in school (K-3), pre-school, and community health agencies. Scheduled seminars will be conducted on campus and in the field. (S/U only.)

HES 3141 (HEN 331) HEALTH EDUCATION AND RELATED HEALTH SCIENCE CONTENT: PUBESCENCE
PR: Admission to the program or CI. Programs, curriculum, health services and health education related to health needs and interest of pubescence. (S/U only.)

HES 3191 (HEN 332) SEMINAR AND INTERNSHIP IN HEALTH EDUCATION PROGRAMS—ADOLESCENTS AND YOUNG ADULTS
PR: Admission to the program or CI. Supervised teaching in health education (middle school or junior high school). Selected field experiences in community health programs. (S/U only.)

HES 3510 (HEN 334) CONSUMER HEALTH
PR: Admission to HEN program or CI. An investigation of advertising and consumer practices in relation to health care. (S/U only.)

HES 3244 (HEN 335) HEALTH COUNSELING
PR: Admission to HEN program or CI. A study and application of theory and methods of health counseling. (S/U only.)

HES 4142 (HEN 411) HEALTH EDUCATION AND RELATED HEALTH SCIENCE CONTENT: ADOLESCENTS AND YOUNG ADULTS
PR: Admission to the program or CI. A study of health needs, programs, services and health content areas of adolescents and young adults. (S/U only.)

HES 4192 (HEN 412) SEMINAR AND INTERNSHIP: HEALTH EDUCATION AND PROGRAMS—ADOLESCENTS AND YOUNG ADULTS
PR: Admission to the program or CI. Supervised teaching in senior high schools and selected field experiences in community health programs. (S/U only.)

HES 4143 (HEN 421) HEALTH EDUCATION AND RELATED HEALTH SCIENCE CONTENT: ADULTS
PR: Admission to the program or CI. A study of health needs, services and health education programs focusing on adults, including the aging. (S/U only.)

HES 4193 (HEN 422) SEMINAR AND FIELD EXPERIENCE: ADULT HEALTH
PR: Admission to the program. Supervised field experiences in adult health programs in schools and the community. (S/U only.)

HES 4276 (HEN 424) HEALTH CARE DELIVERY SYSTEMS
PR: Admission to HEN program or CI. An investigative study and evaluation of health care delivery systems in the U.S. and other countries. (S/U only.)
HES 4722 (HEN 431) CURRENT PROBLEMS IN HEALTH
PR: Admission to the program or CI. An investigation of current health problems, programs and research methods. (S/U only.)

HES 4294 (HEN 432) SEMINAR AND FIELD EXPERIENCE: CURRENT HEALTH PROBLEMS
PR: Admission to the program. Supervised field experience in selected health programs. (S/U only.)

Humanities Education (EDY)

HUM 4870 (EDY 433) CURRENT TRENDS IN THE TEACHING OF HUMANITIES
Curricular patterns, materials, and instructional practices in the teaching of humanities. (Formerly EDY 533)

Junior College (EDH)

EDH 6061 (EDH 651) THE JUNIOR COLLEGE IN AMERICAN HIGHER EDUCATION
History of higher education, philosophical and cultural bases for definition of its role, and contemporary issues, such as control, financing, and curricular patterns. The place and problems of the community junior college will be central concerns of this course.

EDH 6938 (EDH 653) SEMINAR IN COLLEGE TEACHING
Implications of learning theory and student characteristics for teaching at the college level. Types of teaching procedures, innovation, evaluation, student freedom and responsibility for learning.

Library-Audiovisual Education (EDL)

LIS 4301 (EDL 418) INTRODUCTION TO AV EQUIPMENT AND PRODUCTION
PR: Upper level standing in the College of Education or CI. Knowledge of essential hardware for classroom teaching; including running and maintenance. Simple production of teaching materials. Organization and use of materials and equipment in teaching situations. No credit given to Library Science/Audiovisual majors.

LIS 5016 (EDL 500) FOUNDATIONS OF LIBRARIANSHIP
Overview of and introduction to the study of library service; history; organization; specialized literature; outstanding leaders; current trends, issues, and problems. Place of the library in society with its contributions to that society. (Formerly EDL 500.)

LIS 5333 (EDL 508) TELEVISION IN THE SCHOOL
Utilization of open and closed circuit broadcasting in the instructional process.

LIS 5457 (EDL 520) MEDIA AND EDUCATIONAL FACILITIES
Designing teaching stations and media centers for effective media utilization. Practice in helping classroom teachers modify existing classrooms in the use of newer media.

LIS 5315 (EDL 525) INSTRUCTIONAL GRAPHICS
PR: CI. Theoretical aspects, planning and production of instructional graphic material. The theory of graphic communications. Interpreting needs for instructional materials appropriate for given behavioral objectives.

LIS 5321 (EDL 526) PREPARING SINGLE CONCEPT FILMS
PR: CI. Techniques and procedures in the preparation of educational films. Ascertaining concepts, script writing, graphics, lighting, filming, editing.

LIS 6409 (EDL 600) INTRODUCTION TO LIBRARY ADMINISTRATION
Behavioral approach to planning, organizing, staffing and controlling libraries as organizations; identification of administrative principles, theories, and problems of all types of libraries; critical examination of methods of administration supporting library functions, programs, and services; fiscal and legal responsibilities of libraries.

LIS 6520 (EDL 601) SELECTION OF LIBRARY MATERIALS
Bibliographical sources, evaluative criteria for books and principles of book selection for libraries.

LIS 6110 (EDL 602) HISTORY OF LIBRARIES
Development of libraries as found from the earliest records to the great libraries of modern times and the library as a social institution.

LIS 6260 (EDL 603) INFORMATION SCIENCE IN LIBRARIANSHIP
Historical overview of the emergence of information science as a discipline. The fundamental concepts of information retrieval systems and subsystems, related information technologies, and their applications to the field of librarianship.

LIS 6119 (EDL 604) CONTEMPORARY PUBLISHING AND PRINTING
PR: EDL 601. A survey of book publishing as it is carried on today, primarily in the United States. Emphasis on structure of the industry, economic conditions, technological developments, social functions of book publishing and distribution. Complementary relations between libraries and publishing.

LIS 6111 (EDL 605) HISTORY OF CHILDREN'S LITERATURE
Historical bibliographical survey of imaginative and information literature for children.

LIS 6608 (EDL 606) BASIC INFORMATION SOURCES AND SERVICES
An in-depth examination of the basic sources of information in the general library; discussion of bibliographical control of all communication media, with emphasis on those tools which are of most value to general reference services; and the provision of various types of reference services. (Formerly EDL 513.)

LIS 6508 (EDL 607) THE CURRICULUM AND INSTRUCTIONAL TECHNOLOGY
Effective utilization of instructional materials as they relate to specific areas of the curriculum in elementary and high school programs.

LIS 6271 (EDL 608) RESEARCH METHODS IN LIBRARIANSHIP
Overview of present status of research in library and information science; introduction to research methods and their application to librarianship; designed to prepare students to plan, conduct, and evaluate research relating to the acquisition, classification, cataloging, retrieval, and dissemination of information. Open to both majors and non-majors in library-audiovisual education.

LIS 6946 (EDL 609) SUPERVISED FIELD WORK
PR: Completion of General Program Requirements and CI.

LIS 6651 (EDL 610) BOOKS AND RELATED MATERIALS OF LATIN AMERICAN COUNTRIES SUITABLE FOR CHILDREN AND YOUNG PEOPLE
Bibliographic sources, aids and tools for the selection and utilization of Latin American books and related materials suitable for children and young people. Examination of representative materials in terms of the basic principles and criteria of selection for libraries.

LIS 6605 (EDL 611) ADVANCED INFORMATION SOURCES AND SERVICES
PR: EDL 606. Reference materials in the humanities, social sciences, science, and technology.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>LIS 6455</td>
<td>THE ORGANIZATION AND ADMINISTRATION OF THE SCHOOL MEDIA CENTER</td>
<td>5</td>
<td>PR: General Program Requirements or CI. Media quarters, facilities and equipment. Basic principles of organization and administration of media programs in elementary and secondary schools.</td>
</tr>
<tr>
<td>LIS 6506</td>
<td>MATERIALS FOR CHILDREN</td>
<td>4</td>
<td>Examination of materials for all institutions in which children are served: school media centers, public libraries, kindergartens, etc. Stress on selection aids, reviewing techniques, utilization. (Formerly EDL 514.)</td>
</tr>
<tr>
<td>LIS 6735</td>
<td>TECHNICAL SERVICES IN LIBRARIES</td>
<td>4</td>
<td>Principles of general library practice in technical services operations. Emphasis on descriptive cataloging and use of unabridged Dewey Decimal Classification. (Formerly EDL 515.)</td>
</tr>
<tr>
<td>LIS 6745</td>
<td>ADVANCED CATALOGING</td>
<td>4</td>
<td>PR: EDL 614 or CI. An examination of changing policies and procedures in the administration of acquisitions, cataloging, binding, photographic reproduction and related area. Analysis of research in the field.</td>
</tr>
<tr>
<td>LIS 6572</td>
<td>BOOKS AND RELATED MATERIALS FOR YOUNG ADULTS</td>
<td>5</td>
<td>Young adult materials for use in secondary school libraries, young adult sections of public libraries and other institutions serving youth. Equal emphasis upon 1) selection principles and bibliographic sources as well as upon 2) utilization in terms of service to the young adult. (Formerly EDL 519.)</td>
</tr>
<tr>
<td>LIS 6312</td>
<td>PREPARING INSTRUCTIONAL MEDIA</td>
<td>4</td>
<td>Fundamentals of preparing and using audiovisual as they relate to the communication process. (Formerly EDL 523.)</td>
</tr>
<tr>
<td>LIS 6661</td>
<td>DOCUMENTS AND SERIALS</td>
<td>4</td>
<td>The nature of documents and serials, their reference and research value; techniques of acquisition, cataloging, organization, conservation and reference use.</td>
</tr>
<tr>
<td>LIS 6597</td>
<td>FOUNDATIONS OF EDUCATIONAL TECHNOLOGY</td>
<td>4</td>
<td>Traces historical development and the application of educational technology to school media services.</td>
</tr>
<tr>
<td>LIS 6428</td>
<td>AUDIOVISUAL ADMINISTRATION</td>
<td>5</td>
<td>PR: EDL 618 and EDL 607 or CI. Audiovisual administrative practices in school systems and junior colleges.</td>
</tr>
<tr>
<td>LIS 6506</td>
<td>AUDIOVISUAL UTILIZATION</td>
<td>4</td>
<td>Examination (and utilization) of non-print media. Characteristics of media equipment and paradigms of use.</td>
</tr>
<tr>
<td>LIS 6225</td>
<td>ADVANCED STORYTELLING</td>
<td>4</td>
<td>PR: CI or EDL 613. Building storytelling programs for school and public libraries or other educational institutions. Analysis of historical aspects, material suitable for use and audience reaction. (Formerly EDL 524.)</td>
</tr>
<tr>
<td>LIS 6203</td>
<td>READING GUIDANCE PROGRAMS IN LIBRARIES AND CLASSROOMS</td>
<td>4</td>
<td>Working with factors and forces influencing reading habits of children and youth; programs for teaching investigative and library skills; materials and methods for guidance of reading, listening and viewing.</td>
</tr>
<tr>
<td>LIS 6331</td>
<td>LOCAL PRODUCTION OF RADIO AND CLOSED CIRCUIT TELEVISION</td>
<td>4</td>
<td>Utilization and broadcasting techniques for educators. Stress will be placed on local school production, micro-teaching, and studio broadcasting.</td>
</tr>
<tr>
<td>LIS 6610</td>
<td>INFORMATION SOURCES AND SERVICES IN THE HUMANITIES</td>
<td>4</td>
<td>PR: EDL 606 or CI. Detailed consideration of the bibliographical and reference materials in the humanities with training and practice in their use for solving problems arising in the reference service.</td>
</tr>
<tr>
<td>LIS 6620</td>
<td>INFORMATION SOURCES AND SERVICES IN THE SOCIAL SCIENCES</td>
<td>4</td>
<td>PR: EDL 606 or CI. Characteristics of the social science disciplines and structure, concepts, methods of investigation. Understanding of social science reference tools as means of bibliographic control and as vehicles of research.</td>
</tr>
<tr>
<td>LIS 6630</td>
<td>INFORMATION SOURCES AND SERVICES IN SCIENCE AND TECHNOLOGY</td>
<td>4</td>
<td>PR: EDL 606 or CI. Study of representative reference sources in pure and applied sciences with equal attention given to typical problems encountered in scientific and technological reference service.</td>
</tr>
<tr>
<td>LIS 6445</td>
<td>SEMINAR IN PUBLIC LIBRARIES</td>
<td>3</td>
<td>PR: EDL 600 or CI. Identification of problems and critical examination of methods in administrative areas of technical, student, and teaching staff services, fiscal and legal responsibilities, staff organization and supervision in public libraries.</td>
</tr>
<tr>
<td>LIS 6432</td>
<td>SEMINAR IN ACADEMIC LIBRARIES</td>
<td>3</td>
<td>PR: EDL 600 or CI. Identification of problems and critical examination of methods in administrative areas of technical, student, and teaching staff services, fiscal and legal responsibilities, staff organization and supervision in academic libraries.</td>
</tr>
<tr>
<td>LIS 6472</td>
<td>SEMINAR IN SPECIAL LIBRARIES</td>
<td>3</td>
<td>PR: EDL 600 or CI. Identification of problems and critical examination of methods in administrative areas of technical and special service clientele; fiscal and legal responsibilities, staff organization and services in special libraries.</td>
</tr>
<tr>
<td>LIS 6262</td>
<td>LIBRARY SYSTEMS PLANNING</td>
<td>4</td>
<td>Applications of data processing technology to automation of library files. Emphasis on applications of computer hardware and software to administrative, circulation, and ordering data, catalog and index production, serials records.</td>
</tr>
<tr>
<td>LIS 6263</td>
<td>SEMINAR IN LIBRARY AUTOMATION</td>
<td>4</td>
<td>Seminar in the application of data processing technology to libraries, information centers, and library networks. Emphasis on operational systems.</td>
</tr>
<tr>
<td>LIS 6935</td>
<td>TECHNIQUES FOR TEACHING IN THE SCHOOL MEDIA CENTER</td>
<td>4</td>
<td>Methods and techniques pertinent to working with students and teachers in the school media program. To be taken concomitantly with EDL 609 or CI.</td>
</tr>
<tr>
<td>LIS 6906</td>
<td>INDEPENDENT STUDY</td>
<td>1-5</td>
<td>PR: 20 hours earned in program and consent of adviser. (Formerly EDL 681.)</td>
</tr>
</tbody>
</table>

**Measurement—Research—Evaluation (EDQ)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>EDF 7469</td>
<td>CRITICAL ISSUES IN EDUCATIONAL MEASUREMENT AND EVALUATION</td>
</tr>
</tbody>
</table>
EDF 7437 (EDQ 702) ADVANCED
MEASUREMENT-COGNITIVE AREA
PR: EDF 605. Measurement, assessment theory and procedures appropriate to the "Cognitive Domain," i.e., intellectual abilities, aptitudes, achievements, skills. (Formerly EDQ 601.)

EDF 7438 (EDQ 703) ADVANCED
MEASUREMENT-AFFECTIVE AREA
Measurement, assessment theory and procedures appropriate to the affective domain, i.e., feelings, attitudes, interests, personal characteristics. (Formerly EDQ 603.)

EDF 7407 (EDQ 705) STATISTICAL ANALYSIS
FOR EDUCATIONAL RESEARCH I
Application of statistical techniques to the study of educational problems: Tests of significance and confidence intervals, analysis of variance (one-way factorial), correlation and linear regression. (Formerly EDQ 607.)

EDF 7408 (EDQ 707) STATISTICAL ANALYSIS
FOR EDUCATIONAL RESEARCH II
PR: EDQ 705. Application of statistical techniques to the study of educational problems: Multiple correlation and regression, Introductory Factor Analysis and selected non-parametric techniques. (Formerly EDQ 609.)

EDF 7409 (EDQ 708) STATISTICAL ANALYSIS
FOR EDUCATIONAL RESEARCH III
PR: EDQ 707. Application of statistical techniques to the study of educational problems: Trend analysis, analysis of variance models and expectation of mean squares; analysis of covariance; method of least squares; Bayesian statistics (introduction). (Formerly EDQ 608.)

EDF 7484 (EDQ 709) DESIGN OF EXPERIMENT-
PRODUCT RESEARCH IN EDUCATION
PR: EDQ 708. Basic Experimental research design theory and models appropriate for education. (Formerly EDQ 609.)

EDF 7485 (EDQ 711) DESIGN OF DESCRIPTIVE-
PROCESS RESEARCH
PR: EDQ 708. Theory and procedures for conducting descriptive research in education. (Formerly EDQ 611.)

EDF 6489 (EDQ 713) APPLICATION OF
COMPUTER LANGUAGE AND PROCEDURES IN
EDUCATION
Development of understanding and technical skill in relation to computer and data processing approaches to solution of educational research, and administrative problems. Training in use of Fortran as a programming language. (Formerly EDQ 613.)

EDF 7493 (EDQ 720) RESEARCH-BASED
PLANNING EVALUATION AND DEVELOPMENT
IN EDUCATION
Introduction to systematic planning and development procedures including needs assessment, proposal development, evaluation design and process engineering. Emphasis placed on analysis of evaluation models and theory. (Formerly EDQ 620.)

EDF 7494 (EDQ 721) A BASIS FOR PLANNING
AND DEVELOPMENT IN EDUCATION
An introduction to systems theory and techniques emphasizing application to selected problems and situations in education. Development of competence in applying PERT, GANTT, Mission-Function-Task, and Modeling procedures. (Formerly EDQ 621.)

Music Education (EDM)

--- (EDM 215) THEORETICAL BASES OF
MUSIC EDUCATION
The course is designed to investigate music education practices in the schools. It provides the student with experiences and information early in his academic career which will enable him to determine his commitment to professional music education.

MUE 3413 (EDM 370) BAND MATERIALS
PRACTICUM
PR: CI. A study of band materials, in a laboratory setting, appropriate to elementary and secondary school music programs. Course content will change each quarter. May be repeated for a total of 6 hours credit.

MUE 3411 (EDM 380) CHORAL MATERIALS
PRACTICUM
PR: CI. A study of choral materials, in a laboratory setting, appropriate to elementary and secondary school music programs. Course content will change each quarter. May be repeated for a total of 6 hours credit.

MUE 3414 (EDM 390) ORCHESTRAL MATERIALS
PRACTICUM
PR: CI. A study of orchestra materials, in a laboratory setting, appropriate to elementary and secondary school music programs. Course content will change each quarter. May be repeated for a total of 6 hours credit.

--- (EDM 415) MUSIC IN THE
ELEMENTARY SCHOOL
A study of principles, techniques, materials, and activities as they relate to a comprehensive music curriculum in Grades K-6.

--- (EDM 416) FOUNDATIONS OF
INSTRUMENTAL MUSIC
PR: CI, Junior Standing. Introduction to the foundations of instrumental music instruction in the elementary and middle school.

--- (EDM 417) CLASSROOM MUSIC IN THE
SECONDARY SCHOOL
PR: CI. Development and implementation of methods and techniques for teaching music to the student not participating in secondary school music performing groups. (Formerly EDM 437.)

--- (EDM 418) INSTRUMENTAL MUSIC IN
THE SECONDARY SCHOOLS
PR: CI, Junior Standing. Development and implementation of methods and techniques for teaching secondary school instrumental music. (Formerly EDM 433.)

--- (EDM 419) CHORAL METHODS IN THE
SECONDARY SCHOOL
PR: CI, Junior Standing. Development and implementation of methods and techniques for teaching secondary school choral music. (Formerly EDM 439.)

MUE 6780 (EDM 601) TECHNIQUES OF
RESEARCH IN MUSIC EDUCATION
Professional bibliography and individual research projects.

MUE 6189 (EDM 603) MUSIC SUPERVISION AND
ADMINISTRATION
The music curriculum in relation to the total school program; staff and budgetary needs.

MUE 6416 (EDM 614) VOCAL MATERIALS AND
CONDUCTING
A study of materials appropriate for use in vocal groups. Emphasis is given to vocal materials appropriate for use in secondary schools.

MUE 6417 (EDM 617) INSTRUMENTAL
MATERIALS AND CONDUCTING
A study of materials appropriate for use in instrumental groups. Emphasis is given to instrumental materials appropriate for use in secondary schools.

MUE 6641 (EDM 633) CURRENT TRENDS IN
SCHOOL INSTRUMENTAL MUSIC
New materials, equipment, techniques of teaching and recent historical trends in instrumental music.
Natural Science—Mathematics Education (EDN)

SCE 4630 (EDN 425) NEW TRENDS IN TEACHING THE PHYSICAL SCIENCES
Physical Science Study Committee Physics, Chemical Education Materials Study and other new approaches to the teaching of the physical sciences. Recommended for teachers of Physics, Chemistry and Earth Sciences.

SCE 4631 (EDN 427) NEW TRENDS IN TEACHING BIOLOGY
Recent developments in curriculum materials and in strategies for teaching biological sciences, grades 7-12. Recommended for pre-service teachers of secondary school biology.

MAE 4320 (EDN 441) TEACHING JUNIOR HIGH SCHOOL MATHEMATICS
PR: 24 quarter hours of mathematics or CC. Instructional procedures and materials for teaching mathematics in the middle grades.

SCE 4320 (EDN 443) TEACHING SCIENCE IN THE MIDDLE GRADES
PR: EDN 459 or EDE 417 plus 20 hours of Science or CI. Techniques and materials of instruction for teaching science in the middle grades.

MAE 4330 (EDN 451) TEACHING SENIOR HIGH SCHOOL MATHEMATICS
PR: EDC 401 or concurrent registration in EDC 401 and admission to teacher education program in mathematics. Techniques and materials of instruction in mathematics.

MAE 4885 (EDN 452) INTERPRETING MATHEMATICAL SYMBOLISM

SCE 4330 (EDN 459) TEACHING METHODS IN THE SECONDARY SCHOOL—SCIENCES
PR: Completion of 40 hours in approved science areas or CI; completion of EDC 401 or concurrent registration in EDC 401. Techniques and materials of instruction in secondary school sciences.

SCE 4305 (EDN 460) COMMUNICATION SKILLS IN THE SCIENCE CLASSROOM
PR: EDR 407, EDN 459 or concurrent registration in EDN 459. Reading and communication skills important in understanding scientific literature and communicating findings to others. (Formerly EDN 559.)

MAE 5636 (EDN 515) THE UTILIZATION OF LABORATORY TECHNIQUES IN THE TEACHING OF MATHEMATICS
PR: 18 quarter hours of mathematics or CI. In this course students will make an examination of a variety of sample laboratory lessons along with methods for creating and evaluating such lessons.

SCE 5937 (EDN 583) SELECTED TOPICS IN SCIENCE EDUCATION
May be repeated when topics are not duplicated.

MAE 6356 (EDN 616) TEACHING OF PRE-SECONDARY SCHOOL MATHEMATICS
PR: 18 quarter hours of mathematics or CI. Development of strategies and materials for teaching mathematical concepts and skills appropriate to pre-secondary school years. May be repeated for credit up to 15 hours.

MAE 6337 (EDN 621) TEACHING OF HIGH SCHOOL ALGEBRA
PR: B.A. in mathematics or certification in secondary mathematics. Philosophy, content, new trends, and methods of teaching beginning, intermediate, and advanced high school algebra.

MAE 6338 (EDN 622) TEACHING OF HIGH SCHOOL GEOMETRY
PR: B.A. in mathematics or certification in secondary mathematics. Philosophy, content, new trends, and methods of teaching high school geometry.

MAE 6136 (EDN 637) CURRENT TRENDS IN SECONDARY MATHEMATICS EDUCATION
Curricular patterns and instructional practices in secondary mathematics.

SCE 6634 (EDN 639) CURRENT TRENDS IN SECONDARY SCIENCE EDUCATION
PR: Bachelor’s degree with major in science area; certification in secondary science, or CI. Curricular patterns and instructional practices in secondary science.

SCE 6336 (EDN 651) TEACHING SECONDARY SCHOOL BIOLOGY
PR: CI. Effective use and production of instructional materials in the biological sciences. Interrelation of philosophy, materials and classroom practices.

SCE 6346 (EDN 653) TEACHING SECONDARY SCHOOL PHYSICAL & EARTH SCIENCES
PR: CI. Effective use and production of instructional materials in the physical and earth sciences. Interrelation of philosophy materials, and classroom practices.

Physical Education for Teachers (EDP)

HES 2400 (EDP 255) FIRST AID
Meets the American Red Cross certification requirements in standard and advanced first aid.

PET 3942 (EDP 311) SEMINAR AND FIELD EXPERIENCE IN PHYSICAL EDUCATION
Students spend approximately two hours a day at an elementary school teaching physical education and assisting in the classroom. Emphasis is placed on understanding the primary aged child and effective ways of setting the teacher-learning environment. (S/U only.)

PET 3381 (EDP 312) HUMAN KINETICS I
The development and integration of the neuromuscular and associated sensory systems as they affect motor and perceptual-motor performance. The physiology of muscular contraction, the accompanying immediate changes in the cardiopulmonary systems, and the permanent physiological changes resulting from exercise.

PET 3434 (EDP 313) MOVEMENT EDUCATION THEORY AND APPLICATION I
A two course sequence emphasizing movement experiences appropriate for elementary school children. The philosophy, objectives, and analytical framework of movement education are studied relative to basic movement competence. Principles of space, time, force, and flow of human movement are applied to the development of children through basic movement and manipulative skills leading to gymnastics, dance, and sports-related activities.

PET 3001 (EDP 314) INDIVIDUAL ASSESSMENT
A personal evaluation of various factors related to the effective teaching of physical education. An individual profile that can be used for counseling purposes will be the final product of this course.

* Enrollment in these courses requires admission to the Physical Education Program.
PET 3943 (EDP 331) SEMINAR AND FIELD EXPERIENCE IN PHYSICAL EDUCATION (5)
PR: EDP 311. Elementary school physical education teaching experiences are provided for students with added focus on the upper elementary grades. Seminars emphasize planning and teaching methodology. Health and recreation as they relate to elementary school children are studied.

PET 3372 (EDP 332) HUMAN KINETICS II (4)
PR: EDP 312 and 314. The structure and function of the nervous, skeletal, and muscular systems of the human body as they contribute to efficient movement; deviations in either structure or function in these systems and the role of exercise in rehabilitation.

PET 3435 (EDP 333) MOVEMENT EDUCATION THEORY AND APPLICATION II (3)
A two-course sequence emphasizing movement experiences appropriate for elementary school children. The philosophy, objectives, and analytical framework of movement education are studied relative to basic movement competence. Principles of space, time, force, and flow of human movement are applied to the development of children through basic movement and manipulative skills leading to gymnastics, dance, and sports-related activities.

PET 3430 (EDP 331) SEMINAR AND INTERNSHIP IN PHYSICAL EDUCATION (5)
PR: EDP 321. Physical education teaching experience is provided at various grade levels. Seminars are concerned with organization, evaluation, and extra-class activities. Individual teaching is analyzed and programmed.

PET 3377 (EDP 333) HUMAN KINETICS III (4)
PR: EDP 322. The mechanical laws of physics as they relate to movement within and of the human body and the projection of objects in throwing, hitting, and kicking. Efficiency of human movement through sound body mechanics.

PEP 3205 (EDP 333) MOVEMENT EDUCATION THEORY AND APPLICATION III (3)
The application of principles of space, time, force, and flow of human movement to the development of children through gymnastics. The bio-mechanical aspects of performance are also analyzed. Open to program majors only.

PEQ 3101 (EDP 365) AQUATICS (3)
PR: Red Cross beginning swimmer’s skills, or equivalent. Includes analysis and methodology of teaching swimming skills, conducting class activities, and the organization and conducting of aquatic programs in the school and the community.

PET 4442 (EDP 411) SEMINAR AND FIELD EXPERIENCE IN PHYSICAL EDUCATION (5)
PR: EDP 331. A three course experience involving supervised teaching experiences at the secondary school level. On-campus seminars emphasize: development of junior and senior high school students; the influence of various teaching styles on the learning process; the process of individualization; structuring meaningful learning experiences in the psychomotor, cognitive, and affective domains.

PET 4340 (EDP 412) APPLIED HUMAN KINETICS I (4)
PR: EDP 332. A three course sequence which stresses the biomechanical analysis of movement, principles of psychomotor learning and teaching competencies in dance and the skills and strategies common to a number of individual and team sports.

PET 4233 (EDP 421) SEMINAR AND INTERNSHIP IN PHYSICAL EDUCATION (5)
PR: EDP 331. A three course experience involving supervised teaching experiences at the secondary school level. On-campus seminars emphasize: development of junior and senior high school students; the influence of various teaching styles on the learning process; the process of individualization; structuring meaningful learning experiences in the psychomotor, cognitive, and affective domains.

PET 4361 (EDP 422) APPLIED HUMAN KINETICS II (4)
PR: EDP 412. A three course sequence which stresses the biomechanical analysis of movement, principles of psychomotor learning, and teaching competencies in dance and the skills and strategies common to a number of individual and team sports.

PET 4324 (EDP 431) SEMINAR AND INTERNSHIP IN PHYSICAL EDUCATION (5)
PR: EDP 331. A three course experience involving supervised teaching experiences at the secondary school level. On-campus seminars emphasize: development of junior and senior high school students; the influence of various teaching styles on the learning process; the process of individualization; structuring meaningful learning experiences in the psychomotor, cognitive, and affective domains.

PET 4361 (EDP 432) APPLIED HUMAN KINETICS III (4)
A three course sequence which stresses the biomechanical analysis of movement, principles of psychomotor learning and teaching competencies in dance, and the skills and strategies common to a number of individual and team sports.

PET 4306 (EDP 458) PRINCIPLES OF AND ISSUES IN COACHING (5)
The application of principles from philosophy, psychology, sociology, and physiology to competitive athletics and coaching.

PET 4622 (EDP 459) ATHLETIC TRAINING (3)
PR: CI. Principles and techniques of conditioning athletes for competition; prevention and care of injuries in physical education and athletic activities.

PEQ 4125 (EDP 466) COACHING OF SWIMMING (3)
Methods of organizing and coaching a competitive swimming team.

PEO 4644 (EDP 469) COACHING OF FOOTBALL (3)
Theory and practice of the fundamental techniques, organizational problems and strategy involved in coaching football.

PEP 4424 (EDP 478) COACHING OF WRESTLING (4)
Theory and practice of the fundamental techniques, organizational problems and strategy involved in coaching wrestling.

PEO 4514 (EDP 479) COACHING OF SOCCER (3)
Theory and practice of the fundamental techniques, organizational problems and strategy involved in coaching soccer.

LEI 4007 (EDP 486) COMMUNITY RECREATION (4)
Introduction to recreational outlets in the community and the administrative problems confronting recreational playground leaders and directors of community recreational programs. Offered on Independent Study basis only.

PEP 4304 (EDP 488) COACHING OF TRACK AND FIELD (4)
Theory and practice of the fundamental techniques, organizational problems and strategy involved in coaching track.

PEO 4624 (EDP 489) COACHING OF BASEBALL (3)
Theory and practice of the fundamental techniques, organizational problems and strategy in coaching basketball.

PEO 4219 (EDP 499) COACHING OF BASEBALL (3)
Theory and practice of the fundamental techniques, organizational problems and strategy involved in coaching baseball.

PET 6051 (EDP 600) PROFESSIONAL ASSESSMENT (4)
Selected readings of current trends in physical education; discussion of philosophies of teaching; and individual appraisal of knowledge, values, attitudes, and professional competencies.

PET 6345 (EDP 610) BIO-KINETICS OF HUMAN MOVEMENT (4)
Integration of basic kinesiological foundations applied to
teaching physical education. Specific topics include: physical growth and neuro-muscular development, role of neuromuscular mechanisms in motor performance, physical principles of human movement and the effects of exercise on the muscular and cardio-respiratory systems.

PET 6396 (EDP 611) SPECIALIZED STUDY IN BIOKINETICS OF HUMAN MOVEMENT: (SUBJECT) (1-4)
Will provide in-depth study in specific areas related to neurological, physiological, and mechanical principles of human movement.

PET 6205 (EDP 620) SOCIO-PSYCHOLOGICAL ASPECTS OF HUMAN MOVEMENT (4)
Involves the psychological and sociological implications of movement to historical and contemporary man. Emphasis on psycho-motor learning, movement behavior, physical self-concept, role of movement in society and values and attitudes held toward movement.

PET 6296 (EDP 621) SPECIALIZED STUDY IN SOCIO-PSYCHOLOGICAL ASPECTS OF HUMAN MOVEMENT: (SUBJECT) (1-4)
Will provide in-depth study in specific areas related to sociological and psychological principles of human movement.

PET 6425 (EDP 630) CURRICULUM AND INSTRUCTIONAL PROCESS IN PHYSICAL EDUCATION (4)
Application of learning theory and education innovations, study of structure of subject matter and styles of teaching and investigation of the nature of the learner as these relate to teaching physical education. Fieldwork may be a requirement of this course.

PET 6496 (EDP 631) SPECIALIZED STUDY IN CURRICULUM AND INSTRUCTIONAL PROCESS IN PHYSICAL EDUCATION: (SUBJECT) (1-5)
Will provide in-depth study in specific areas related to the teaching-learning process of physical education.

PET 6645, 6646 (EDP 640-641) PHYSICAL EDUCATION FOR THE HANDICAPPED I & II (5,5)
This sequential course is concerned with the motor performance and physical fitness of neurologically handicapped individuals and the unique problems of motor skill learning found in children and youth with visual, auditory, speech or orthopedic handicaps. Study includes field experiences which apply knowledge related to psycho-educational characteristics; planning, conducting, and evaluating individualized programs of special physical education; and review of relevant literature.

PET 6535 (EDP 650) RESEARCH IN PHYSICAL EDUCATION (4)
Emphasis will be directed toward planning, conducting, and interpreting research in physical education. The function of research in improving programs as well as the technical aspects of research designs appropriate to physical education are included for study.

PET 6910 (EDP 651) RESEARCH PROJECT IN PHYSICAL EDUCATION (1-6)
In-depth research study of selected topics concerning human movement. Topics will vary according to needs and interests of students. May be repeated for credit.

Reading Education (EDR)

RED 4360 (EDR 407) READING IN SECONDARY CONTENT AREAS (2)
PR: CI and other content area PR or CR. Provides basic instruction on phonics, word recognition, readability, interests, corrective procedures, reading behaviors, comprehension, etc. Offered only in conjunction with special content reading courses.

RED 4320 (EDR 408) READING IN MIDDLE SCHOOLS (4)
This course is for new teachers planning to, or currently teaching in a middle school. Students will study reading as it relates to their particular subject matter area.

RED 4337 (EDR 410) CURRENT TRENDS IN READING IN THE SECONDARY SCHOOL (4)
Survey of secondary, college, and adult reading practices, problems, and research. Work with students at commensurate level required. (Formerly EDR 409.)

RED 4515 (EDR 430) CORRECTIVE READING FOR THE CHILD (4)
PR: EDE 409 or equivalent. Procedures for meeting individual differences through diagnosis of needs, differentiated instruction, selective use of materials, and classroom organization.

RED 6365 (EDR 610) READING IN SECONDARY AND HIGHER EDUCATION (4)
PR: CI and graduate standing; EDR 407, EDR 410, or EDE 409. The course is designed for graduate students and in-service teachers with appropriate BA degrees, who need and/or desire more knowledge beyond an introductory level about reading at the Secondary (7-12) and higher (Community College, University) levels. Students will study reading as it applies to their discipline and their level. Work with students and a research paper required. Not for undergraduates nor to be used as a first course in Reading.

RED 6516 (EDR 630) CORRECTIVE READING IN THE CLASSROOM (4)
PR: EDE 409 or equivalent. Use of diagnostic and prescriptive procedures with individual and group reading instruction. (Formerly EDR 530.)

RED 6546 (EDR 631) DIAGNOSIS OF READING DISABILITIES (4)
PR: EDE 609, EDF 605. Causes of reading disability; techniques and materials in diagnosis of reading problems, including telebinocular and audiometer screening. Diagnoses of reading disabilities are required.

RED 6548 (EDR 632) TECHNIQUES OF REMEDIAL READING (4)
PR: EDE 609, EDF 605, and EDR 631. Materials and methods in remediation of moderate to severe reading disability cases. Supervised individual tutoring and in-depth evaluation and use of materials.

RED 6838 (EDR 633) PRACTICUM IN READING (4)
PR: EDE 609, EDF 605, EDR 631, EDR 632, and CI. Remediation of severe reading disability cases, tutoring of individuals and small groups, interview techniques, preparation of case reports.

RED 6247 (EDR 634) CURRICULUM AND SUPERVISION PROBLEMS IN READING (4)
PR: EDE 609, EDF 605, EDR 631, EDR 632, and CI. Planning and administering programs and preparation as consultants in reading. Intensive work on individual project required.

RED 6747 (EDR 635) SURVEY OF READING RESEARCH (4)
PR: EDF 605 and EDF 607, at least two Reading courses and CI. Course deals with research in reading — a review of research is conducted by student and presented in written form.

RED 7048 (EDR 709) READING AS A SYMBOLIC PROCESS (4)
PR: EDR 610 or EDE 609. Advanced Graduate standing in Reading/Language Arts or CI. Examination and understanding of the relationship of the various perceptual, learning, affective and cognitive processes to the acquisition of reading competencies.
Speech Communication-English Education (EDT)

SED 4372 (EDT 423) DIRECTING SPEECH ACTIVITIES IN THE SECONDARY SCHOOL (5)
PR: 15 hours of speech communication courses or CI. Coaching and directing cocurricular activities in discussion, debate, oratory, theatre, oral interpretation, and extemporaneous speaking. Planning and supervision of tournaments, contests, and festivals. Observations required. (Formerly EDT 523.)

SED 4374 (EDT 424) READING IN SPEECH COMMUNICATION INSTRUCTION (2)
PR: EDR 407 or in conjunction with this course. Strategies and materials for teaching oral and silent reading in speech and theatre classes at the secondary school level. (Formerly EDT 524.)

SED 6670 (EDT 621) CURRENT TRENDS IN TEACHING SPEECH COMMUNICATION (5)
PR-CI. Curricular patterns; preparation of personnel; instructional materials, facilities and practices used in teaching speech communication.

SED 6670 (EDT 622) SEMINAR IN THE HISTORY OF SPEECH COMMUNICATION IN EDUCATION (5)
PR: CI. Studies in selected sources, critical writings, and research which have contributed to the development of speech communication as an academic discipline.

Vocational and Adult Education (EDV)

EVT 2084 (EDV 207) THE TEACHER IN A WORLD OF WORK (4)
A study of educational efforts in preparing people for work, the relationship of a job to man's life style, and the concept of education as a lifelong process.

BTE 3365 (EDV 353) ADMINISTRATIVE OFFICE MANAGEMENT (5)
Functions of the business office to include systems and procedures, communications, records management, office employee behavior, controlling the work of the office, and principles of office organization. Also includes the methodology necessary for teaching these areas in either separate courses or integrated block programs.

BTE 3363 (EDV 361) BUSINESS AND OFFICE MACHINES (5)
PR: Basic Typewriting. Instruction and practice on selected business and office machines to acquaint students with capabilities and limitations of the machines. Instruction and reading on teaching methodology for business and office.

EVT 4263 (EDV 406) ORGANIZATION AND COORDINATION OF COOPERATIVE PROGRAMS (4)
A study of the purposes and processes used to organize, plan, direct, control, and evaluate cooperative programs.

EVT 4041 (EDV 407) PRINCIPLES OF ADULT AND VOCATIONAL EDUCATION (4)
An overview of current policies and principles to include their historical sociological and philosophical bases out of which principles of adult and vocational education have been accepted and implemented. (Formerly EDV 507.)

EVT 4540 (EDV 410) READING SKILLS IN ADULT AND VOCATIONAL EDUCATION (2)
PR: EDR 407, or concurrent registration in EDR 407. Students will study reading and communication skills as they relate to their particular content areas in Adult and Vocational-Technical Education. This course, along with EDR 407, satisfies State certification requirement pertaining to secondary reading.
Supervised Field Experience Courses (below)

PR: CI. Planned supervised functions in the area of specialization and co-ordinated with selected schools, government, offices, social agencies, businesses and industries on site.

ADE 4945 (EDV 431) SUPERVISED FIELD EXPERIENCE: ADULT EDUCATION (1-8)

EVT 4945 (EDV 431) SUPERVISED FIELD EXPERIENCE: BUSINESS EDUCATION (1-8)

EVT 4946 (EDV 431) SUPERVISED FIELD EXPERIENCE: DISTRIBUTIVE EDUCATION (1-8)

EVT 4946 (EDV 431) SUPERVISED FIELD EXPERIENCE: INDUSTRIAL-TECHNICAL EDUCATION (1-8)

Special Teaching Methods Courses (below)

Methods, techniques, and materials for skill development.

ADE 4361 (EDV 443) SPECIAL TEACHING METHODS: ADULT EDUCATION (5)

EVT 4363 (EDV 443) SPECIAL TEACHING METHODS: BUSINESS EDUCATION (5)

EVT 4366 (EDV 443) SPECIAL TEACHING METHODS: DISTRIBUTIVE EDUCATION (5)

EVT 4369 (EDV 443) SPECIAL TEACHING METHODS: INDUSTRIAL-TECHNICAL EDUCATION (5)

Methods of Teaching Courses (below)

Methods, techniques, and materials for instruction. This course will specialize in Diversified Cooperative Training.

ADE 4360 (EDV 445) METHODS OF TEACHING: ADULT EDUCATION (4)

BTE 4360 (EDV 445) METHODS OF TEACHING: BUSINESS EDUCATION (4)

EVT 4377 (EDV 445) METHODS OF TEACHING: DISTRIBUTIVE EDUCATION (4)

——— (EDV 445) METHODS OF TEACHING: INDUSTRIAL-TECHNICAL EDUCATION (4)

BTE 4369 (EDV 461) OFFICE OCCUPATIONS PROCEDURES (5)

PR: EDV 361, and Senior standing. This course is designed to integrate learnings from preceding business and office education courses. Applications involve actual and simulated office situations, problems, evaluation. Emphasis is placed on the qualifications needed for efficient business office operations.

EVT 4813 (EDV 480) FACILITY DESIGN AND MANAGEMENT (4)

Design and develop instructional facility floor plans consistent with modern and efficient methods of instruction as well as evaluate existing classrooms, laboratories, and shops. Selection and location of equipment. Review and prepare operational plans for the management of equipment, furniture, tools, and supplies as they relate to effective student learning.

Curriculum Construction Courses (below)

Curriculum scope, the process of planning and organizing instructional programs with emphasis on task analysis and process evaluation.

ADE 5161 (EDV 503) CURRICULUM CONSTRUCTION: ADULT EDUCATION (4)

The first number is the State Common Course Number

— (EDV 503) CURRICULUM CONSTRUCTION: BUSINESS EDUCATION (4)

EVT 5171 (EDV 503) CURRICULUM CONSTRUCTION: DISTRIBUTIVE EDUCATION (4)

EVT 5176 (EDV 503) CURRICULUM CONSTRUCTION: INDUSTRIAL-TECHNICAL EDUCATION (4)

EVT 5367 (EDV 504) PREPARATION AND DEVELOPMENT FOR TEACHING (4)

The development of selected instructional materials, use of new educational media, performance evaluation instruments, and counseling techniques.

ADE 5385 (EDV 505) THE ADULT LEARNER (4)

PR: EDF 305 or equivalent. Physiological and psychological changes in individuals throughout the adult life span and the implications which these changes have in learning capabilities of adults. A review of recent research on adult learning is also emphasized.

Program Management Courses (below)

Organization, co-ordination, and budgeting of adult, cooperative, and special programs.

ADE 5160 ((EDV 506) PROGRAM MANAGEMENT: ADULT EDUCATION (4)

——— (EDV 506) PROGRAM MANAGEMENT: BUSINESS EDUCATION (4)

EVT 5162 (EDV 506) PROGRAM MANAGEMENT: DISTRIBUTIVE EDUCATION (4)

EVT 5164 (EDV 506) PROGRAM MANAGEMENT: INDUSTRIAL-TECHNICAL EDUCATION (4)

EVT 5370 (EDV 508) OCCUPATIONAL SAFETY AND HEALTH (OSHA) (4)

Planning and organizing safety and health course content to be included in occupational education programs in Florida. Content to be identified in and selected from Federal Registers, Department of Labor, Occupational Safety and Health Standards.

EVT 5190 (EDV 511) SCHOOL-COMMUNITY DEVELOPMENT (4)

An approach to identifying, assessing, and analyzing individual, institutional, and community needs, for the purpose of cooperative program planning, community involvement and public support.

ADE 6197 (EDV 605) ADULT BASIC EDUCATION (4)

An overview of adult basic education with emphasis on current issues and problems of curriculum and instruction in program development for culturally different adults.

EVT 6300 (EDV 621) INDIVIDUALIZED INSTRUCTION (4)

Attention is given to individualized instruction to include the special needs student, the slow learner, and the more capable student.

EVT 6563 (EDV 631) CURRENT TRENDS (4)

Historical information, issues, current trends, new dimensions and problems in the area of specialization.

EVT 6926 (EDV 641) STAFF DEVELOPMENT (4)

Implementation of new procedures addressed to discreet developmental needs of the staff as identified by an educational agency.

Practicum Courses (below)

A problem-centered field study in the local community, school, government, office, social agency, business or industry.

ADE 6946 (EDV 651) PRACTICUM: ADULT EDUCATION (4-8)
### Basic and Interdisciplinary Engineering

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EGB 1111</td>
<td>(EGB 101) GRAPHIC ANALYSIS I</td>
<td>The theory and application of projective systems and related topics. Basic problems in engineering drawing. Purchase of drawing instruments and other necessary drafting supplies to be discussed at first class session. Lec-Lab.</td>
</tr>
<tr>
<td>EGB 1402</td>
<td>(EGB 103) GRAPHIC ANALYSIS III</td>
<td>PR: EGB 101. An elective course designed for students with limited background in pre-calculus mathematics necessary for graphical processes. Emphasis on graphical concepts of algebraic and trigonometric relationships.</td>
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<tr>
<td>EGB 1403</td>
<td>(EGB 104) GRAPHIC ANALYSIS IV</td>
<td>Continuation of EGB 103.</td>
</tr>
<tr>
<td>EGB 1002</td>
<td>(EGB 105) ENGINEERING ORIENTATION</td>
<td>The role of engineering in society, characteristics of different fields of engineering, required preparation for engineering careers, techniques and approaches used by engineers in their profession. (S/U only.)</td>
</tr>
<tr>
<td>EGB 3411</td>
<td>(EGB 301) ENGINEERING PROBLEMS II</td>
<td>CR: MTH 352. Continuation of EGB 201.</td>
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<tr>
<td>EGB 3412</td>
<td>(EGB 302) ENGINEERING PROBLEMS III</td>
<td>CR: MTH 353. Continuation of EGB 301.</td>
</tr>
<tr>
<td>EGB 3413</td>
<td>(EGB 303) ENGINEERING PROBLEMS IV</td>
<td>CR: MTH 354. Continuation of EGB 302.</td>
</tr>
<tr>
<td>EGB 3211</td>
<td>(EGB 304) ANALYSIS &amp; COMPUTATION II</td>
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<tr>
<td>EGB 3443</td>
<td>(EGB 306) ENGINEERING STATISTICS I</td>
<td>PR: MTH 352. An introduction to the basic concepts of statistical analysis. Probability, distribution functions. (Formerly EGS 461.)</td>
</tr>
</tbody>
</table>
EGN 3374 (EGB 312) INTRODUCTION TO ELECTRICAL SYSTEMS II
PR: EGB 311. Continuation of EGB 311. (4)

EGN 3375 (EGB 313) INTRODUCTION TO ELECTRICAL SYSTEMS III
PR: EGB 311. Continuation of EGB 311 or EGB 312. (4)

EGN 3343 (EGB 321) THERMODYNAMICS I

EGN 3344 (EGB 322) THERMODYNAMICS II

EMC 3121 (EGB 332) TRANSFER OPERATIONS I
PR: EGB 321. Extension of classical thermodynamics into the description of non-equilibrium processes. Emphasis on the use of balance equations and dimensional analysis in the macroscopic description of momentum, energy and mass transfer processes. Introduction to heat transfer correlations and design equations. (3)

EGN 3433 (EGB 325) DYNAMICS RESPONSE OF ENGINEERING SYSTEMS I
PR: PHY 303, 305. Linear dynamic analysis of electrical, mechanical, pneumatic, hydraulic and thermal systems. Introduction to analog computers; LaPlace transformation. Block diagram representation, transient and frequency response. Lec.-Dem. (4)

EGN 3613 (EGB 337) ENGINEERING VALUATION I
PR: EGB 304. Study in analyzing the economic limitations imposed on engineering activities using basic models which consider the time value of money. (3)

EGN 3313 (EGB 340) SOLID MECHANICS I
PR: MTH 351. Principles of statics, mechanical equilibrium, forces, moments, plane trusses. Lec.-prob. (3)

EGN 3321 (EGB 341) SOLID MECHANICS II
PR: EGB 340. Dynamics of discrete particles and distributed mass bodies; spatial kinematics and kinetics. Lec.-prob. (3)

EGN 3365 (EGB 342) MATERIALS ENGINEERING I
PR: CHM 213, EGB 340. An introduction to structure and property relationships in engineering materials, i.e., metal, ceramic and polymer systems. Environmental effects on materials are also treated. Lecture. (4)

EGN 3354 (EGB 343) BASIC FLUID MECHANICS
PR: EGB 341. Fundamental and experimental concepts in ideal and viscous fluid theory; momentum and energy considerations, introduction to hydraulics, pipe flow. Lecture. (4)

EGN 3331 (EGB 344) DEFORMABLE BODIES
PR: EGB 340. Stress, strain, Hooke's Law; torsion, beam, column analysis; combined stresses; inelastic effects, limit design. Lec.-prob. (3)

EGN 3366 (EGB 345) MATERIALS ENGINEERING II
PR: EGB 342. Continuation of EGB 342. (4)

EGN 3355 (EGB 346) COMPRESSIBLE FLOW
PR: EGB 343. Compressible flow and free surface flow. (4)

EGN 4421 (EGB 401) ENGINEERING ANALYSIS I

EGN 4450 (EGB 405) INTRODUCTION TO LINEAR SYSTEMS
PR: EGB 401. Study and application of matrix algebra, differential equations and calculus of finite differences. (Formerly EGS 541.) (3)

EGN 4933 (EGB 480) SPECIAL TOPICS
New technical topics of general interest on an intermediate or experimental basis. May be repeated to a total of 10 credit hours. (1-5)

EGN 4935 (EGB 481) PROFESSIONAL ENGINEERING SEMINAR I
PR: CI. A lecture-discussion seminar on modern trends in the engineering profession. (1-5)

EGN 4936 (EGB 483) PROFESSIONAL ENGINEERING SEMINAR II
PR: CI and Senior standing. An examination of current engineering and related problems facing the graduating senior. (S/U only.) (1-5)

EGN 4427 (EGB 601) ENGINEERING ANALYSIS VII
PR: CC. Application of applied mathematics to the study of linearized dynamic systems and networks; state space; stability theory; extensions to discrete and non-linear systems. (3,3,3,3)

EGN 6720 (EGB 610) SCIENTIST IN THE SEA I
PR: CI and diver certification (NAVI or equiv.) Hyperbaric Operations; the basic principles, physiology and psychology involved in submarine hyperbaric operations, inside and outside habitats. Communication and life support is also treated extensively. Lec.-lab. (Also listed as MSC 610.) (4)

EGN 6721 (EGB 611) SCIENTIST IN THE SEA II
PR: CI and diver certification (NAVI or equiv). Marine Sciences; an extensive discussion of research equipment and techniques for underwater operations in the Marine Sciences presented by practicing research workers in the field. Lec.-lab. (Also listed as MSC 611.) (4)

EGN 6722 (EGB 612) SCIENTIST IN THE SEA-III
PR: CI and diver certification (NAVI or equiv). Underwater Engineering; the ocean as a constraint for structures and devices. Factors involved in the planning and design of underwater operations and experimental devices. Lec.-lab. (Also listed as MSC 612.) (4)

EGN 6911 (EGB 681) DIRECTED RESEARCH
PR: GR. Master's level. Repeatable. (S/U only.) (var.)

EGN 6951 (EGB 694) GRADUATE INSTRUCTION METHODS
Special course to be used primarily for the training of graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.) (1-5)

EGN 6992 (EGB 695) GRADUATE RESEARCH METHODS
Special course to be used primarily for the training of graduate research assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.) (1-5)

--- (EGB 697) INDEPENDENT STUDY
Independent study in which students must have a contract with an instructor. Repeatable. (S/U only.) (var.)

EGN 6971 (EGB 699) THESIS: MASTER's
Repeatable. (S/U only.) (var.)
The second number (in parentheses) is the USF Course Number

EGN 7911 (EGE 781) DIRECTED RESEARCH (var.)
PR: GR. Ph.D. level. Repeatable. (S/U only.)

EGN 7980 (EGE 799) DISSERTATION: DOCTORAL (var.)
PR: Must be admitted to Doctoral Candidacy. Repeatable. (S/U only.)

Electrical and Electronic Systems (EGE)

ELR 3301 (EGE 301) LABORATORY 1 (1)
PR: EGB 311.

ELR 3302 (EGE 302) LABORATORY 2 (1)
PR: EGB 312.

ELK 3303 (EGE 303) LABORATORY 3 (1)
PR: EGE 301.

EEL 3100, 4101 (EGE 310, 410) NETWORK ANALYSIS AND DESIGN I, II (3,3)

EEL 3302, 4301 (EGE 320, 420) ELECTRONICS I, II (3,3)
PR: EGB 312. A second course in the physical principles of electronic devices with emphasis on semiconductor electronics. Includes an analysis and design of amplifiers and switching circuits.

EEL 4140, 4141 (EGE 330, 430) FIELDS AND WAVES I, II (3,3)
PR: PHY 305, 306, EGB 401. A basic introduction to electromagnetic field theory, including static and dynamic electromagnetic fields.

COP 3510 (EGE 361) INTRODUCTION TO COMPUTER SCIENCE I (2)
PR: MTH 122. CR: EGE 362. Introduction to the concepts of algorithmic formulation of problems for computer solution and the general abstract operations used in these formulations.

COP 3510 (EGE 362) COMPUTER SCIENCE LABORATORY I (1)
CR: EGE 361. Laboratory for implementation of algorithms in a general purpose computer language.

COP 3511 (EGE 363) INTRODUCTION TO COMPUTER SCIENCE II (2)

COP 3511 (EGE 364) COMPUTER SCIENCE LABORATORY II (1)

ELR 4304 (EGE 404) LABORATORY 4 (1)
PR: EGE 302; CR: EGE 420

ELR 4305 (EGE 405) LABORATORY 5 (1)
PR: EGE 302; CR: EGE 421

ELR 4306 (EGE 406) LABORATORY 6 (1)
PR: EGE 302; CR: EGE 430.

ELR 4114 (EGE 407) ELECTRICAL MEASUREMENTS (2)
PR: EGE 310. Techniques and principles of electronic measurements. (Formerly EGE 548)

ELR 4115 (EGE 408) ELECTRICAL MEASUREMENTS LABORATORY (1)
CR: EGE 407. (Formerly EGE 549)

EEL 4133 (EGE 409) MATRICES AND ELECTRICAL NETWORKS (3)
PR: EGE 310. Introduction to matrices applied to electrical networks; two-port network parameters.

EEL 4101 (EGE 410) SEE EGE 310

EEL 4102 (EGE 411) LINEAR SYSTEMS ANALYSIS (3)
PR: EGE 410. Provides further study in the analysis of linear networks and systems. Includes time and frequency domain points of view. Laplace, Fourier and superposition integrals.

EEL 4301 (EGE 420) SEE EGE 320

EEL 4300 (EGE 421) COMMUNICATION CIRCUITS (3)
PR: EGE 420. Provides further study in electronic circuits. Includes oscillator, modulator, and detector analysis and design.

EEL 4511 (EGE 425) COMMUNICATION ENGINEERING (3)
PR: EGE 421. System considerations of electronic circuits; radio propagation; antennas; transmitters and receivers.

EEL 4511 (EGE 426) COMMUNICATIONS LABORATORY (1)
CR: EGE 425. Experiments in amplitude modulation, frequency modulation, pulse communications and data transmission.

EEL 4411 (EGE 430) SEE EGE 330

EEL 4108 (EGE 432) DISTRIBUTED NETWORKS (3)
PR: EGE 330, EGE 410. Transmission lines standing waves, impedance, waveguides.

ELR 4313 (EGE 433) DISTRIBUTED NETWORKS LABORATORY (1)
Laboratory for EGE 432.

ELR 4228 (EGE 435) SYSTEMS APPROACH TO BIOMEDICAL ENGINEERING I (3)
PR: EGE 410 or CC. Characterization of physiological systems, principles of modeling, system properties. Transfer function description, physiological feedback, effects of non-linearities. (Formerly EGS 432.)

ELR 4221 (EGE 436) SYSTEMS APPROACH TO BIOMEDICAL ENGINEERING II (3)

EEL 4656 (EGE 440) LINEAR CONTROL SYSTEMS (3)
PR: EGB 325, EGE 420. Introduction to analysis and design of linear feedback control systems. Covers block diagram, flow charts, Bode, Nyquist and root locus techniques.

EEL 4656 (EGE 441) CONTROL LABORATORY (1)
CR: EGE 440.

EEL 4705 (EGE 444) LOGIC DESIGN (3)
PR: EGB 312. Non-majors may enroll with the consent of the Chairperson. Binary number system; truth functions; Boolean algebra; canonical forms; minimization of combinational logic circuits; logic circuits in computers.

EEL 4705 (EGE 445) LOGIC LABORATORY (1)
CR: EGE 444.

EEL 4757 (EGE 446) MICROPROCESSOR PRINCIPLES AND APPLICATIONS (3)

EEL 4743 (EGE 447) MICROPROCESSORS LABORATORY (1)
CR: EGE 446. Laboratory for Microprocessor use and evaluation.
EEL 4330 (EGE 450) MICROELECTROINCS
ENGINEERING (3)

EEL 4330 (EGE 451) MICROELECTROINCS LABORATORY (1)
CR: EGE 450.

EEL 4220, 4222 (EGE 460, 462) ELECTROMECHANICS I, II (3,3)

EEL 4220, 4222 (EGE 461, 463) ELECTROMECHANICS LAB I,II (1,1)
CR: EGE 460, 462, respectively.

COP 4400 (EGE 470) COMPUTER SYSTEMS (3)
PR: EGB 304, MTH 353 or CC. Linked course with EGE 471. Principles of computer organization, machine and assembly language programming.

COP 4400 (EGE 471) COMPUTER SYSTEMS LAB (1)
PR: EGB 304, MTH 353 or CC. Linked course with EGE 470. Computer systems and programming laboratory.

COP 4620 (EGE 472) INTRO TO SYSTEMS PROGRAMMING (3)
PR: EGE 470. Introduction to systems programming, design of assemblers, loaders, linking, data structures and operating systems.

COP 4550 (EGE 473) PROGRAMMING LANGUAGES (3)
PR: EGE 470. An introduction to programming languages, syntax and semantics, properties of algorithmic languages, binding times, arithmetic, string handling, data structures, list processing, translation.

EEL 4933, 4906, 4906 (EGE 480, 481, 482) SPECIAL ELECTRICAL TOPICS I,II,III (1-4 each)
PR: EGE 499.

CNM 4110 (EGE 490) ENGINEERING ANALYSIS FOR COMPUTER SCIENCE II (3)
PR: CC or MTH 401. Numerical solutions of ordinary differential equations through series and numerical methods.

MAP 4363 (EGE 491) ENGINEERING ANALYSIS FOR COMPUTER SCIENCE III (3)

COT 4130 (EGE 492) SWITCHING THEORY (3)
PR: EGE 444. Elements of sequential machine theory including minimization methods.

COT 4001 (EGE 493) INTRODUCTION TO DISCRETE STRUCTURES (3)
PR: EGE 444. Introduction to set algebra, propositional logic and finite algebraic structures as they apply to computers.

CDA 4101 (EGE 494) COMPUTER ORGANIZATION (3)
PR: EGE 444. The structural organization of digital computers; control, data operations, I/O, memory. Functional description of their behavior.

CDA 4316 (EGE 495) MINICOMPUTER LABORATORY (1)
CR: EGE 494; Minicomputer organization and programming.

(EGE 497) INDEPENDENT STUDY (1-5)
PR: CI. Specialized independent study determined by the students' needs and interests. May be repeated up to 15 credit hours. ($/U only.)

CIS 4911 (EGE 498) COMPUTER SCIENCE PROJECT (3)
Projects intended to develop individual interests and abilities in computer science involving either computer hardware or software aspects of a well defined proposal.

EEL 4905 (EGE 499) DESIGN PROJECT (3)
PR: Senior standing. An individual or team project involving the design of an electrical component or system. Required of all electrical seniors.

EEL 5367 (EGE 520) PULSE CIRCUIT PRINCIPLES (3)
PR: EGE 411, 421. An introduction to the analysis and design of pulse and timing circuits with applications.

EEL 5435 (EGE 530) UHF PRINCIPLES (3)
PR: EGE 411, 421, 430. A study of tubes, devices and circuits peculiar to systems which operate at ultra high and super high frequencies.

EEL 5435 (EGE 531) UHF LABORATORY (1)
CR: EGE 530.

EEL 5620 (EGE 540) NONLINEAR CONTROL SYSTEMS (3)

EEL 5620 (EGE 541) CONTROL LABORATORY (1)
CR: EGE 540.

EEL 5730 (EGE 542) SEQUENTIAL CIRCUITS (3)
PR: EGE 444. The design of switching circuits with inputs that are functions of time is carried from a word description through a minimum state realization using flip-flops, logic gates and delay elements.

EEL 5711 (EGE 544) DIGITAL COMPUTERS (3)
PR: EGE 444. Digital arithmetic; computer subsystems, arithmetic units; control units; memory units; general purpose computers.

EEL 5711 (EGE 545) DIGITAL LABORATORY (1)
CR: EGE 544.

EEL 5755 (EGE 546) DIGITAL SIGNAL PROCESSING TECHNIQUES (3)
PR: EGE 411 or CC. Techniques of real time statistical analysis of signals, signal conditioning and enhancement. Design of digital networks (Formerly EGB 523.)

EEL 5760 (EGE 547) DISCRETE STRUCTURES FOR DIGITAL SYSTEMS (3)
PR: EGE 444. Set algebra, basic algebraic structures in computers. Boolean algebra, propositional logic, and graphs. Applications to computers.

EEL 5250 (EGE 560) POWER SYSTEMS ANALYSIS (3)
PR: CC. Analysis techniques for AC power systems.

EEL 5253 (EGE 562) COMPUTER ANALYSIS OF POWER SYSTEMS (3)
PR: CC. Review of Fortran programming, matrix algebra, network formulation, short circuit studies, simulation of algebraic equations, load flow studies, numerical solution of differential equations, transient stability studies. Strong emphasis on techniques adaptable to digital computer studies, programs will be written and run on the IBM 360/65.

COP 5621 (EGE 570) TOPICS IN COMPUTERS AND PROGRAMMING (4)
PR: CC. Machine organization, assembly and machine language, data structures, systems programming, operating systems.

EEL 5820 (EGE 573) IMAGE PROCESSING BY COMPUTERS (3)
PR: EGE 411 or CC. Two dimensional convolution and system functions. Fourier transform in two dimensions. Digitization of two dimensional signals, sampling theorems, band-limited signals. Image processing by computers. Applications of image processing. (Formerly EGS 525.)

EEL 5934, 5907, 5907 (EGE 580, 581, 582) SPECIAL ELECTRICAL TOPICS, I, II, III (1-3 each)
PR: CC.
EEL 5931 (EGE 585) ENGINEERING SEMINAR (1)
PR: CC.

EEL 6150, 6151 (EGE 610, 611) ADVANCED CIRCUIT THEORY I, II (3-3)
PR: CC. Network fundamentals; network characterization; frequency analysis; superposition integrals; signal-flow techniques; stability problems; real-and-imaginary relations.

EEL 6152 (EGE 612) NONLINEAR CIRCUITS (3)
PR: CC. Analytical and topological approaches to nonlinear circuits; nonlinear resonance; relaxation oscillations.

EEL 6141, 6142, 6143 (EGE 614, 615, 616) NETWORKS SYNTHESIS, I, II, III (3,3,3)
PR: CC. Network functions; physical realizability; two terminal network synthesis methods; frequency transformation; potential analogy; approximation problems; insertion-loss and transfer function synthesis.

EEL 6522 (EGE 630) INFORMATION THEORY (3)
PR: CC. Concepts of information, information channels, channel capacity, information sources and Shannon's fundamental theorem.

EEL 6387 (EGE 622) NOISE THEORY (3)
PR: CC. Electrical noise and signals through linear filters and electronic systems.

EEL 6830 (EGE 623) CODING THEORY I (3)
PR: CC. Error-correcting codes, algebraic block codes, linear, codes and feedback shift registers. BCH codes and decoding methods.

EEL 6831 (EGE 624) CODING THEORY II (3)

EEL 6831, 6532, 6533 (EGE 626, 627, 628) THEORY OF COMMUNICATION I, II, III (3,3,3)
PR: CC. Physical basis and statistical representation of electrical noise; filtering, modulation, and de-modulation of signals corrupted by noise; correlation techniques and linear prediction; statistical estimation of signal parameter; optimum filters and receivers; ambiguity functions and inverse probability. Quantitative measure of information sources, noise channels and channel capacity; an introduction to error-correcting codes.

EEL 6482, 6483, 6484 (EGE 630, 631, 632) ELECTROMAGNETIC FIELDS AND WAVES I, II, III (3,3,3)
PR: CC. Electromagnetic theory from the engineering point of view, propagation and reflection of waves, guided waves, resonant cavities, antennas and radiation.

EEL 6434 (EGE 635) MICROWAVE GENERATION AND AMPLIFICATION (3)

EEL 6310 (EGE 636) ELECTRICAL LABORATORY (1)
CR: EGE 635.

EEL 6432 (EGE 637) MICROWAVE COMPONENTS (3)
PR: CC. A study of directional couplers, junctions, cavities and other passive microwave components including microwave integrated circuits.

EEL 6433 (EGE 638) MICROWAVE NETWORKS (3)
PR: CC. Scattering and transfer representations of n-ports. Odd and even mode theory. Wave filters.

EEL 6332 (EGE 639) ELECTRICAL PROPERTIES OF THIN FILMS (3)
PR: EGE 430 and EGE 450 or equivalent or CC. Electrical Properties of thin films as derived from Boltzmann's transport equation. The growth of thin films. The fabrication of electrical circuits with thin films. Lecture supplemented by laboratory experiments and demonstrations.

EEL 6631 (EGE 640) DIGITAL CONTROL SYSTEMS (3)
PR: EGE 440 or CC. Sample-data and digital control processes.

EEL 6640 (EGE 641) RANDOM PROCESSES IN CONTROL SYSTEMS (3)
PR: EGE 440 or CC. Analysis and design of control systems subject to random inputs and disturbances.

EEL 6613 (EGE 642) MODERN CONTROL THEORY (3)
PR: EGE 440, 540, 640, 641 or CC. A study of modern control techniques including optimum and adaptive control.

EEL 6174 (EGE 643) OPTIMUM FILTERING AND IDENTIFICATION (3)
PR: CC, or EGE 640. Estimation theory and development of the Kalman-Wiener filters for continuous and discrete-time systems. System identification through deterministic and stochastic approaches. Application to control and communication systems.

EEL 6840 (EGE 644) AUTOMATA THEORY I (3)

EEL 6841 (EGE 645) AUTOMATA THEORY II (3)

EEL 6842 (EGE 646) AUTOMATA THEORY III (3)
PR: EGE 645. Artificial languages, phase-structure grammars, operations on languages, decision problems, discrete value random processes, Markov processes, probabilistic sequential machines, non-deterministic sequential machines.

ELR 6117 (EGE 648) ELECTRICAL MEASUREMENTS (2)
PR: CC. Advanced techniques and principles of electronic measurement.

ELR 6118 (EGE 649) MEASUREMENTS LABORATORY (1)
CR: EGE 648.

EEL 6351, 6352, 6353 (EGE 650, 651, 652) SOLID STATE ELECTRONICS I, II, III (3,3,3)
PR: CC. Theory of operation and application of circuits and devices.

EEL 6386, 6386 (EGE 653, 654) PRINCIPLES OF SEMICONDUCTOR DEVICE MODELING I, II (3)
PR: EGE 411, 430. A course sequence which emphasizes systematic methods of obtaining models which relate device physics to terminal behavior and which provide appropriate compromises between accuracy and simplicity.

EEL 6765 (EGE 655) COMPUTER DESIGN LANGUAGES (3)
PR: CC or EGE 544. Simulation languages for digital computer systems: APL, CDL and others. Simulation of elements, operations, sequences and a complete digital computer.

EEL 6764 (EGE 656) DIGITAL ARITHMETIC METHODS (3)
PR: CC or EGE 544. Study of the number systems and the algorithms used for digital arithmetic computation with emphasis in their implementation, speed and reliability considerations.

EEL 6766 (EGE 657) COMPUTER ARCHITECTURE (3)
PR: CC or EGE 655 or EGE 656. The macro-structure of computers is considered in this course, ranging from the orthodox von Neumann designs to multiprocessors, stack processors, pipe-line systems and associative computers.
EEL 6822 (EGE 658) PATTERN RECOGNITION THEORY
PR: CC. Theory of pattern recognition. Parametric and non-parametric methods, learning theorems, unsupervised learning. Biomedical and other engineering applications. (Formerly EGB 631.)

EEL 6823 (EGE 659) COMPUTER APPROACHES TO PATTERN RECOGNITION

EEL 6261,6262,6263 (EGE 660,661,662) ELECTRIC POWER SYSTEMS I, II, III
PR: CC. Steady-state and transient analysis of interconnected power systems; power circuit protection; transient characteristic of apparatus.

EEL 6270 (EGE 663) LIGHTNING AND SURGE PROTECTION
PR: CC. Methods of protection against overvoltages due to lightning. Ground wire shielding, systems and tower grounding, lightning arresters. Dynamic overvoltages, switching phenomena and system recovery voltages.

EEL 6271 (EGE 664) PROTECTIVE RELAYING OF POWER SYSTEMS
PR: EGE 560, EGE 660 or CC. Fundamentals of instrumentation. Design and operation of protective schemes for equipment in generation, transmission, and distribution circuits. Analysis of abnormal system conditions requiring relay operation.

EEL 6508 (EGE 670) PULSE COMMUNICATIONS SYSTEM
PR: CC. Sampling theory, pulse waveform generation and modulation, PAM, PWM, PPM, related multiplex systems, telemetry applications.

EEL 6506 (EGE 671) DATA TRANSMISSION
PR: EGE 670. Quantization theory, binary coding systems, ideal binary transmission, on-off keying, FSK, PSK, PCM, applications.

EEL 6507 (EGE 672) DATA TRANSMISSION II
PR: EGE 671. M-ary systems-MASK, MFSK, MPSK, orthogonal systems, multilevel and multistate coding, simplex codes, orthogonal and biorthogonal codes, polyphase systems, synchronization methods.

COP 6530 (EGE 675) DATA STRUCTURES
PR: CC. Representation of information and information structures in a computer system, linear linked lists, multilinked lists, hash algorithms for list manipulation, stacks, deques and queues, trees and binary trees, tree traversing algorithms.

COP 6613 (EGE 676) OPERATING SYSTEMS
PR: CC. Operating systems functions and design, resource management, protection systems, process communication and deadlocks.

COP 6642 (EGE 677) PROGRAMMING LANGUAGES AND TRANSLATION
PR: CC. Grammars and languages, symbols, strings, syntax, parsing, the design of a compiler, storage organization and symbol tables, translator writing systems.

ESI 6198 (EGE 678) CASE STUDIES IN INDUSTRIAL COMPUTER SYSTEMS
PR: CC. A case study approach to the definition and implementation of industrial computer systems. The role of automation within the industrial concern. Design of systems in inventory, production control, and related areas. Directing the computer function and systems development. (Formerly EGS 628.)

EEL 6756 (EGE 679) SPECTRAL ANALYSIS BY COMPUTERS
PR: CC. Introduction to time series analysis by computers.

Discrete Fourier methods applied to time series, sample spectrum, cross spectrum, smoothing of spectral estimators, distribution properties. Application to physical, biological and environmental problems. (Formerly EGS 635.)

EEL 6935 (EGE 680) SPECIAL ELECTRICAL PROBLEMS
PR: CC.

EEL 6935 (EGE 682) SELECTED ELECTRICAL TOPICS
PR: CC. (Formerly EGE 681.)

ELR 6940 (EGE 694) GRADUATE INSTRUCTION METHODS
PR: CC. Sampling theory, pulse waveform generation and modulation, PAM, PWM, PPM, related multiplex systems, telemetry applications.

EEL 6932 (EGE 698) ADVANCED ENGINEERING SEMINAR
PR: CC.

EEL 6912 (EGE 699) THESIS: MASTER'S
PR: CC. (Var.) Repeatable. (S/U only.)

ELR 7910 (EGE 781) DIRECTED RESEARCH
PR: GR. Ph.D. level. Repeatable. (S/U only.)

EEL 7913 (EGE 799) DISSERTATION: DOCTORAL
PR: Must be admitted to Doctoral Candidacy. Repeatable. (S/U only.)

Energy Conversion and Mechanical Design (EGR)

EMC 3103 (EGR 311) THERMODYNAMICS III
PR: EGB 321. The study of energy conversion processes and cycles as modified for optimization of capacity and efficiency. Applications include pumps, compressors, turbines, internal combustion engines, power and refrigeration cycles.

EMC 3117 (EGR 315) HEAT TRANSFER I
PR: EGB 323. The basic laws of conduction, convection and radiation; analysis of the effect on heat transfer of thermal conductivity, emissivity, fluid transport properties and Reynolds number. Lec-lab.

EML 3264 (EGR 326) DYNAMICS OF MECHANICAL SYSTEMS
PR: PHY 301, MTH 352. Plane and angular motion; velocity and acceleration curves, velocities and accelerations in mechanics, static and dynamic force analysis. Rolling and sliding contact pairs, cams, gear tooth action. Lec-lab.

EMC 3301 (EGR 348) PHYSICAL MEASUREMENTS I

EMC 3303 (EGR 350) ENERGY CONVERSION LABORATORY I
CB: EGB 321. Introduction to engineering laboratory measurement with emphasis on the use of the library and the writing of technical reports. Experiments in the measurement of temperature, pressure, fluid flow, psychrometric properties of
air, concentration, viscosity. Determination of mass-energy balances of simple systems. Preparation of formal engineering reports covering laboratory work.

**EMC 4104 (EGR 411) THERMODYNAMICS IV** (4)  
PR: EGR 321 or CI. Introduction to Chemical Engineering Thermodynamics; Maxwell relations, properties of real substances and solutions, description of multicomponent systems in equilibrium. Qtr. III, IV.

**EMC 4501 (EGR 413) FLUID MACHINERY I** (4)  
PR: EGB 323 and EGB 343 or CI. Performance characteristics of pumps and fans; energy conversion in fluid machines; design of piping and duct systems; proper selection of pumps and fans for given fluid systems; analysis of system efficiency parameters; correlation of design predictions with experimental data.

**EMC 4112 (EGR 416) ELECTRONIC EQUIPMENT COOLING** (3)  

**EMC 4131 (EGR 417) FUELS AND COMBUSTION** (3)  
PR: EGR 311 or EGR 411. A study of chemical reactions as sources of energy. Emphasis on the combustion characteristics of gaseous, solid, and liquid fuels, and equipment needed to safely and economically control combustion processes. Lec.-lab.

**EML 4513 (EGR 419) POWER PLANT ANALYSIS AND DESIGN** (3)  
CR: EGR 311. EGR 315. Parameters affecting utility power production; daily load curves; estimation of future loads; economics of power generation; system efficiency as affected by the thermodynamic cycle, multunit scheduling, and load variation; heat transfer regions in the steam generator; water treatment methods.

**ENU 4142 (EGR 421) INTRODUCTION TO NUCLEAR ENGINEERING I** (3)  
Neutron density and thermalization parameters; criticality calculations; transient flux parameters; reactor operation; control instrumentation.

**EML 4601 (EGR 424) REFRIGERATION AND AIR CONDITIONING** (3)  
CR: EGR 311, EGR 315. Application of thermodynamics, heat transfer and fluid flow to the design of systems for controlling our environment; heating and cooling load calculations; psychrometrics of air conditioning processes.

**EML 4500 (EGR 428) MACHINE ANALYSIS AND DESIGN** (3)  

**EML 4503 (EGR 429) MECHANICAL DESIGN I** (3)  
PR: EGR 326. EGR 428. Application of the principles of engineering mechanics, materials and manufacturing to the analysis and design of mechanical elements. Lec.-lab.

**EMC 4411 (EGR 441) ANALOG AND DIGITAL SIMULATION I** (3)  
PR: EGB 325 or CI. The use of analog and digital computers as tools for the solution of engineering problems by means of simulation. Lec.-lab.

**EMC 4402 (EGR 445) DYNAMIC RESPONSE OF ENGINEERING SYSTEMS II** (3)  

**EMC 4522 (EGR 450) ENERGY CONVERSION LABORATORY II** (2)  
PR: EGR 350. Continuation of EGR 350 with emphasis on material and energy balances of mechanical and chemical systems and processes. Lec.-lab.

**EMC 4523 (EGR 451) ENERGY CONVERSION LABORATORY III** (2)  
PR: EGR 450 or CI. Continuation of EGR 450. Emphasis on experiments involving momentum transfer of non-Newtonian fluids, heat conduction, and mass diffusion.

**EMC 4312 (EGR 453) MECHANICAL CONTROL** (3)  
EGB 311, 325, and EGR 441. Analysis of devices for measurement and control. Transmitters, error detectors, controllers and final control elements. Block diagram representation.

**EMC 4311 (EGR 454) CONTROLS LABORATORY** (1)  

**EMC 4314 (EGR 455) PROCESS CONTROL SYSTEMS I** (3)  
PR: EGR 453 or CI. Analysis and design of process control systems. Consideration of typical control sensors and controllers as well as advanced process control techniques such as feedforward and ratio control. (Formerly EGR 553.)

**ECH 4413 (EGR 471) SEPARATION PROCESSES I** (3)  
PR: MTH 303, CR: EGB 321. Introduction to the use of mass and energy balances and to chemical engineering thermodynamics through the description and analysis of separation processes (e.g., crystallization, distillation, osmosis, etc.). Qtr. I, II.

**ECH 4215 (EGR 472) TRANSPORT PHENOMENA I** (4)  
PR: EGR 311, or EGR 343, or EGR 473. A comparative study of transport phenomena with emphasis on the macroscopic applications of the balance and flux equations of momentum, energy and mass.

**ECH 4234 (EGR 473) MASS TRANSFER** (3)  
PR: EGB 323 Study of molecular and turbulent diffusion in fluids, diffusion in solids, mass transfer coefficients and interphase mass transfer. Qtr. II, III.

**ECH 4414 (EGR 474) SEPARATION PROCESSES II** (3)  
PR: EGR 471 or CI. Emphasis on selection and design of separation processes. Familiarization with graphical techniques, group methods and other computational approaches used in design. Use of empirical correlations for size of equipment, efficiency of the process and quality of the separation. Qtr. III, IV.

**ECH 4714 (EGR 475) INDUSTRIAL CHEMISTRY** (3)  
PR: CHM 332, EGR 474. A critical study of selected chemical process industries in order to give the student a better understanding of the direct application of basic chemical process principles.

**ECH 4131 (EGR 476) REACTING SYSTEMS I** (3)  
PR: EGR 411. Design and control of homogeneous chemical reactors, effect of mixing, temperature and flow characteristics. Laboratory (3 contact hours). The student in this laboratory will be responsible for the safe and efficient manufacture of a "chemical" on pilot plant equipment. Lec.-lab.

**ECH 4615 (EGR 478) DESIGN AND CASE PROBLEMS** (3)  
PR: EGB 337, EGR 474. This part of the course exposes the chemical engineering student to the design of a chemical plant or a major part of a process. The annual A.I.Ch.E. student contest design problems and typical design problems supplied by local industries will be used. CASE PROBLEMS: This part of the course stresses engineering "art." The word "case" connotes a specific engineering problem situation actually experienced by someone in the past or present. The student must generate his own individual approach to problem solving, benefitting from those of others in the class. (Formerly EGR 577.)
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>PR Requirements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMC 4930</td>
<td>SPECIAL TOPICS ENERGY CONVERSION I</td>
<td>1-4</td>
<td>CC</td>
<td>Class. Specialized independent study determined by the student's needs and interests. May be repeated up to 15 credit hours. (S/U only.)</td>
</tr>
<tr>
<td>EMC 4931</td>
<td>SPECIAL TOPICS ENERGY CONVERSION II</td>
<td>1-4</td>
<td>CC</td>
<td>Class. Specialized independent study determined by the student's needs and interests. May be repeated up to 15 credit hours. (S/U only.)</td>
</tr>
<tr>
<td>EMC 5651</td>
<td>INDUSTRIAL AIR POLLUTION CONTROL</td>
<td>4</td>
<td>EGB 321</td>
<td>A basic course in the elements of large source air pollution and control as presented from the engineering viewpoint. Major units to be studied: Sources, Atmospheric Meteorology, Diffusion, Local Influences. Control Measures, Emergencies, Protection. Lec.-lab.</td>
</tr>
<tr>
<td>EML 5107</td>
<td>INDUSTRIAL CHEMICAL ENGINEERING THERMODYNAMICS</td>
<td>4</td>
<td>CC</td>
<td>Classical thermodynamics applied to complex power cycles and reacting systems of industrial importance. Review of Maxwell relations, equations of state of real substances, and Gibbs Free Energy and Equilibria.</td>
</tr>
<tr>
<td>EML 5502</td>
<td>FLUID MACHINERY II</td>
<td>3</td>
<td>EGR 413</td>
<td>Performance characteristics of compressors and exhausters, vacuum pumps, and gas turbines; internal energy exchange and fluid flow paths; piping and ducting considerations; economic selection of proper equipment to match fluid and power system requirements; evaluation of off-design conditions.</td>
</tr>
<tr>
<td>EML 5608</td>
<td>MECHANICAL UTILITIES SYSTEMS</td>
<td>3</td>
<td>EGR 413</td>
<td>Analysis and design of a building's mechanical systems for fire and lightning protection, air conditioning, water supply, waste and storm drains.</td>
</tr>
<tr>
<td>EML 5528</td>
<td>ANALYSIS METHODS FOR MECHANICAL DESIGN</td>
<td>3</td>
<td>EGR 428</td>
<td>Treatment of stress, strain and strength aspects of Machine Design. Application of failure theories, residual stresses and energy principles to machine elements.</td>
</tr>
<tr>
<td>EML 5273</td>
<td>ADVANCED DYNAMICS OF MACHINERY</td>
<td>3</td>
<td>EGR 326</td>
<td>A continuation of undergraduate course and devoted to a more detailed study of velocities, accelerations and forces in machine parts having reciprocating, rotating and combined motion. A complete force analysis will be made of an internal combustion engine.</td>
</tr>
<tr>
<td>EML 5505</td>
<td>MECHANICAL DESIGN II</td>
<td>3</td>
<td>EGR 429</td>
<td>A continuation of EGR 429. Lec.-lab.</td>
</tr>
<tr>
<td>EML 5509</td>
<td>PROJECT DESIGN</td>
<td>3</td>
<td>CC</td>
<td>Correlation of previously acquired mechanical design experiences with a creative design project. Lec.-lab.</td>
</tr>
<tr>
<td>EML 5221</td>
<td>MECHANICAL VIBRATION AND BALANCING</td>
<td>3</td>
<td>EGB 341, 401</td>
<td>Transient and steady state vibration analysis of mechanical systems with lumped parameters. Dynamic balancing, vibration isolation and simulation of systems.</td>
</tr>
<tr>
<td>EML 5241</td>
<td>LUBRICATION I</td>
<td>3</td>
<td>EGB 343, 401</td>
<td>The theoretical basis of lubrication and hydrodynamic bearing theory. The study of lubrication requirements of different types of machines.</td>
</tr>
<tr>
<td>EML 5305</td>
<td>INSTRUMENTAL ANALYSIS</td>
<td>4</td>
<td>PHY 305, CHM 213</td>
<td>Instrumental Analysis. This course will deal with the engineering bases of a variety of sophisticated instrumental techniques for chemical analysis. Emphasis will be placed on the physical basis of the instrument and its design rather than on the interpretation of the analysis. Systems to be examined will include light and r.f. spectroscopy, mass spectrometry and methods which depend on various transport properties.</td>
</tr>
<tr>
<td>EML 5315</td>
<td>HYDRAULIC CONTROL</td>
<td>3</td>
<td>EGR 453 or CC</td>
<td>Hydraulic control system components and their effects on closed loop system performance. Lec.-lab.</td>
</tr>
<tr>
<td>EML 5510</td>
<td>POWER UTILIZATION SYSTEMS</td>
<td>3</td>
<td>EGB 311</td>
<td>Standard electrical voltages. NEMA standards, motor parameters, motor control, control system elements, interlocks, conductors, raceways, Electrical Code, Protective devices.</td>
</tr>
<tr>
<td>EML 5930</td>
<td>SPECIAL TOPICS ENERGY CONVERSION III</td>
<td>1-4</td>
<td>CC</td>
<td>Class. Advanced treatment of the general equations of thermodynamics, principal equations of chemical reaction; the chemical potential and equilibrium; analysis of metastable states. Irreversibility and steady flow.</td>
</tr>
<tr>
<td>EML 5610</td>
<td>THERMODYNAMICS OF FLUID FLOW</td>
<td>3</td>
<td>EGR 315</td>
<td>Interrelationship of the equations of fluid motion and of thermodynamics for ideal gases; subsonic and supersonic gas flows, flows with friction and with heat transfer; supersonic nozzle design; parameters of fluid thrust.</td>
</tr>
<tr>
<td>EML 5615</td>
<td>PROCESS HEAT TRANSFER I</td>
<td>3</td>
<td>EGR 315</td>
<td>Review of conduction and convection—ion heat transfer, counterflow, 1-2 parall­counterflow, flow arrangements for increased heat recovery, calculations for process conditions, condensation and evaporation.</td>
</tr>
<tr>
<td>EML 6116</td>
<td>PROCESS HEAT TRANSFER II</td>
<td>3</td>
<td>EGR 315, EGR 613</td>
<td>Extended surface, longitudinal and radial fins, crossflow, finned passages, longitudinal high fin exchangers, radial flow fin exchangers, transverse high fin exchangers and compact heat exchangers.</td>
</tr>
<tr>
<td>EML 6118</td>
<td>HEAT TRANSFER II</td>
<td>3</td>
<td>EGR 315, EGB 401</td>
<td>Steady and unsteady heat transfer by conduction; one, two and three dimensional systems, numerical, graphical and analog methods, finite difference methods and periodic conduction heat flow. (Formerly EGR 515.)</td>
</tr>
<tr>
<td>EML 6119</td>
<td>HEAT TRANSFER III</td>
<td>3</td>
<td>EGR 315 and EGB 401 or CC</td>
<td>Radiative heat transfer. Radiation from black and &quot;grey&quot; bodies. Pure radiative heat transfer and in the presence of other modes of energy transfer. (Formerly EGR 615.)</td>
</tr>
<tr>
<td>EML 6520</td>
<td>ENERGY TRANSFORMATION AND STORAGE</td>
<td>3</td>
<td>EGR 478 or CC</td>
<td>Equipment and Process Design with emphasis on discharge control and environmental protection. Economic, and ecological constraints on optimum design.</td>
</tr>
<tr>
<td>EML 6225</td>
<td>ACOUSTICS AND NOISE CONTROL</td>
<td>3</td>
<td>EGR 453 or CC</td>
<td>Laboratory work with special emphasis on the phase relationship between pressure and particle motion and the effects of absorption and dispersion in real media.</td>
</tr>
</tbody>
</table>

The first number is the State Common Course Number
The second number (in parentheses) is the USF Course Number

EMC 616 (EGR 616) NUMERICAL MEASUREMENT AND CONTROL (3)
PR: CC. Incremental and absolute control systems. Number systems used in numerical control. Digital to analog and analog to digital conversion. Applications.

EMC 684 (EGR 684) SPECIAL PROBLEMS I (1-4)
PR: CC. (Formerly EGR 681.)

EMC 682 (EGR 682) SPECIAL PROBLEMS II (1-4)
PR: CC.

EMC 694 (EGR 694) GRADUATE INSTRUCTION METHODS (1-5)
Special course to be used primarily for the training of graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

EMC 695 (EGR 695) GRADUATE RESEARCH METHODS (1-5)
Special course to be used primarily for the training of graduate research assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

EMC 697 (EGR 697) INDEPENDENT STUDY (var.)
Independent study in which students must have a contract with an instructor. Repeatable. (S/U only.)

EMC 698 (EGR 698) ADVANCED SEMINAR (1-3)
PR: CC.

EMC 799 (EGR 799) DISSERTATION: DOCTORAL (var.)
PR: Must be admitted to Doctoral Candidacy. Repeatable. (S/U only.)
EIN 4312 (EGS 403) PRODUCTION DESIGN I (3)
PR: EGS 402, EGB 306. Methods study, predetermined time systems, wage administration, work measurement techniques including stop-watch time study, work sampling, standard data and control. Lec.-lab.

EIN 4313 (EGS 404) PRODUCTION DESIGN II (3)
PR: EGS 403. Continuation of EGS 403. Lec.-lab.

EIN 4334 (EGS 405) PRODUCTION CONTROL SYSTEMS I (3)
PR: EGS 411, 441, 462. Principles and techniques of industrial planning and control systems design. Cost analysis, forecasting and controlling production activities.

EIN 4335 (EGS 406) PRODUCTION CONTROL SYSTEMS II (3)
PR: EGS 405, 442. Advanced topics in industrial planning and control systems design including the use of CPM, PERT and LOB.

EIN 4352 (EGS 407) ENGINEERING VALUATION II (3)
PR: EGB 337 or equivalent. Analysis of economic limitations on engineering projects. Income tax considerations, replacement models, and obsolescence.

EIN 4364 (EGS 409) PLANT FACILITIES DESIGN I (3)
PR: EGS 404, 407. Design and modification of plant facilities, including design of a complete manufacturing operation. Problems in plant location, layout, material handling and equipment selection.

EIN 4366 (EGS 410) PLANT FACILITIES DESIGN II (3)
PR: EGS 409, 422, 442. Advanced techniques for evaluation of alternative plans for plant arrangement, including equipment location and material handling systems.

ESI 4455 (EGS 411) NETWORK MODELS (3)
PR: EGB 304. A study of the design and analysis of network models as applied to the solution of process related situations.

ESI 4120 (EGS 420) COMPARATIVE COMPUTER LANGUAGES I (1)
PR: EGB 204, 304. Comparison of higher level languages from viewpoint of structure, logic, data processing, speed and ease of usage for applications to system problems. Included are FORTRAN, WATFIV, SIMSCRIPT, GPSS, PL-I and ALGOL.

ESI 4121 (EGS 421) COMPARATIVE COMPUTER LANGUAGES II (2)
PR: EGS 420. Use of the higher level languages analyzed in EGS 420 for specific applications to system design from the viewpoint of language comparisons and preferred choices. Additional comparisons are made with several procedure-oriented languages.

ESI 4521 (EGS 422) COMPUTER SIMULATION I (3)
PR: EGB 304. Use of computers in physical and industrial systems. Simulation languages and their applications.

ESI 4141 (EGS 423) COMPUTER SYSTEMS I (3)

ESI 4142 (EGS 424) COMPUTER SYSTEMS II (3)
PR: EGS 423. Study of computer hardware usage. Peripheral subsystems. Transfer of information and control within a complete operating system. Executive systems and control monitors.

ESI 4143 (EGS 425) COMPUTER SYSTEMS III (3)
PR: EGS 424. A continuation of EGS 424 stressing detailed applications of machine and assembly language to computer operating systems.

ESI 4504 (EGS 427) FORTRAN APPLICATIONS I (3)
ESI 5306 (EGS 540) OPERATIONS RESEARCH (3)
PR: CC. Linear programming, game theoretic models, economic optimization. Not open to students who have had EGS 442.
EIN 5218 (EGS 550) HAZARD CONTROL ENGINEERING (3)
PR: Senior or graduate status. Open to non-majors. Nature of industrial accidents. Practices, standards, OSHA and other governmental requirements for reducing accident frequency and severity in the industrial environment. Design measures for the prevention of health impairment due to non-accidental causes.
ESI 5219 (EGS 560) INDUSTRIAL STATISTICS (3)
PR: CC. Industrial applications of probability, testing of hypotheses, regression techniques and analysis of variance. Not open to students who have had EGS 462.
EIN 5245 (EGS 562) DESIGN OF EXPERIMENTS II (3)
PR: EGS 463. Continuation of material in EGS 463.
ESI 5216 (EGS 563) ENGINEERING STATISTICS III (3)
PR: EGS 462 or equivalent. Application of non-parametric statistics, sequential analysis, orthogonal polynomials and other optimization techniques to industrial problems.
ESI 5222 (EGS 565) STATISTICAL QUALITY CONTROL (3)
PR: EGB 306 or equivalent. Application of statistical techniques to control of industrial processes. Control charts and acceptance procedures. Sequential sampling.
ESI 5233 (EGS 566) RELIABILITY ENGINEERING (3)
EIN 5914, 5915, 5916 (EGS 580, 581, 582) SPECIAL INDUSTRIAL PROJECTS I, II, III (1-3 each)
PR: CC.
EIN 6247 (EGS 603) MAN/MACHINE SYSTEMS (3)
PR: EGS 503. Principles of work measurement, process analysis, value analysis, and human factors and their application to industrial situations.
EIN 6336 (EGS 605) PRODUCTION CONTROL SYSTEMS III (3)
PR: EGS 406 or equivalent. Forecasting procedures, development of production plans, scheduling techniques and inventory models. Application of EDP to production control systems.
EIN 6356 (EGS 607) ADVANCED ENGINEERING VALUATION (3)
PR: EGS 407 or equivalent. Statistical models for analyzing engineering alternatives from an economic viewpoint. The use of advanced engineering economy concepts in solving industrial problems.
ESI 6146 (EGS 620) COMPUTER THEORY I (3)
ESI 6147 (EGS 621) COMPUTER THEORY II (3)
PR: EGS 620. Advanced concepts in programming languages. The interrelation between machine, assembly and procedure oriented languages. Introduction to the design of monitors, assemblers, compilers.
ESI 6148 (EGS 622) COMPUTER THEORY III (3)
PR: EGS 621. Continuation and extension of EGS 621 emphasizing detailed design principles used in the construction of monitors, assemblers and compilers.
ESI 6414 (EGS 641) LINEAR PROGRAMMING (3)
PR: EGS 442 or equivalent. The simplex method, degeneracy, duality theory; applications of linear programming to industrial problems.
ESI 6405 (EGS 642) NONLINEAR AND DYNAMIC PROGRAMMING (3)
ESI 6336 (EGS 644) QUEUEING THEORY (3)
PR: EGS 442, 462. Deterministic and probabilistic queueing models. Poisson queues and special non-Poisson queues with exponential and non-exponential services. Single and multiple channel queues.
ESI 6691 (EGS 646) MULTIVARIABLE OPTIMIZATION (3)
ESI 6341, 6346 (EGS 647, 648) STOCHASTIC PROCESSES I, II (3,3)
PR: EGS 562. Theory and application of stochastic processes as models for empirical phenomena, with emphasis on the following processes: Poisson, stationary, normal, counting renewal, Markov, birth and death. Spectral representations, time series, smoothing and filtering.
ESI 6652 (EGS 650) EVALUATION OF SYSTEM PERFORMANCE I (3)
PR: EGB 401, EGS 441, 462, or CC. Applications of probability and random processes to the design and evaluation of physical systems from the viewpoint of satisfying prescribed specifications. System variabilities include random process inputs and system parameters treated as random variables. Problems.
ESI 6553 (EGS 651) EVALUATION OF SYSTEM PERFORMANCE II (3)
PR: EGS 650. Continuation of EGS 650 with special emphasis upon writing the computer software required to implement the evaluation algorithms. Advanced problems.
ESI 6213, 6214 (EGS 661, 662) THEORY OF INDUSTRIAL STATISTICS I, II (3,3)
PR: EGS 462 or equivalent. Design of experiment mathematical models, application of advanced analysis of variable techniques as applied to industrial problems.
ESI 6227 (EGS 665) STATISTICAL ASSURANCE PLANS (3)
PR: EGS 565 or equivalent. Advanced techniques in sequential quality control systems and acceptance sampling plans.
ESI 6230 (EGS 666) THEORY OF RELIABILITY (3)
PR: EGS 462 or equivalent. Topics in statistical methodology which have applications in the field of reliability. Discrete and continuous distribution models, reliability estimation, reliability structure and growth models, and statistical design for reliability.
ESI 6291 (EGS 668) SPECIAL TOPICS IN STATISTICS (3)
PR: CC. Special topics in statistics related to research in engineering.
EIN 6934, 6935, 6936 (EGS 680, 682, 683) SPECIAL INDUSTRIAL TOPICS I, II, III (1-3 each)
PR: CC.
ESI 6911 (EGS 681) DIRECTED RESEARCH (var.)
PR: GR. Master's level. Repeatable. (S/U only.)
ESI 6550, 6551 (EGS 687, 688) INDUSTRIAL SYSTEMS DESIGN I, II (3,3)
PR: EGS 422. Design of integrated systems using statistical and operations research models. Simulation of integrated systems using digital, analog and hybrid computers.
### Structures, Materials and Fluids (EGX)

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ECI 3505</td>
<td>ENGINEERING LAND SURVEYING</td>
<td>(4)</td>
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<tr>
<td>ENV 3001</td>
<td>ELEMENTS OF ENVIRONMENTAL ENGINEERING</td>
<td>(4)</td>
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<tr>
<td>ECI 4001</td>
<td>STRUCTURES I</td>
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<tr>
<td>ECI 4011</td>
<td>REINFORCED CONCRETE STRUCTURES</td>
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<tr>
<td>ECI 4021</td>
<td>STRUCTURAL DESIGN IN METALS</td>
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<tr>
<td>ECI 4031</td>
<td>REINFORCED CONCRETE STRUCTURES</td>
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### Other Courses

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<td>STRUCTURAL CONNECTIONS</td>
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<td>ECI 4045</td>
<td>STRUCTURES IV</td>
<td>(5)</td>
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<tr>
<td>ECI 4046</td>
<td>STRUCTURAL DESIGN IN METALS</td>
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These courses cover various aspects of engineering, including structures, materials, and fluid dynamics, providing a comprehensive understanding of the principles and applications in these fields.
ceramics; the effects of heat treatment, working, etc., on materials; property limitations exhibited by various materials. Lecture.

EMA 4503 (EGX 423) EXPERIMENTAL METHODS IN MATERIALS ENGINEERING (3) PR: EGX 402 or CI. Introduction to the experimental methods of metallography, X-ray diffraction, phase diagram determination, heat-treating techniques, and electron microscopy. Lec.- Lab. (Formerly EGX 520.)

EMA 4066 (EGX 424) ENGINEERING POLYMERS (3) PR: CI. Structure and bulk properties of polymers. High elasticity, topics in viscoelasticity, the glass transition, irreversible deformation. Technology of plastics, fibers and elastomers. Lecture. (Formerly EGX 521.)

EMA 4324 (EGX 425) CORROSION OF ENGINEERING MATERIALS I (3) PR: EGB 342. Principles of corrosion and the rationalization of corrosion rates in terms of polarization diagrams. Origin and prevention of the localized forms of corrosion. Approaches to corrosion prevention. Lecture. (Formerly EGX 522.)

EMA 4605 (EGX 426) DIFFUSION (3) PR: EGX 402. Theoretical and practical analysis of diffusion in solids including the physical meaning and implications of the concepts which influence and apply to diffusion in crystalline solids. Lecture. (Formerly EGX 523.)

EMA 4644 (EGX 427) ENGINEERING CERAMICS (3) PR: EGB 342. Detailed examination of the materials of ceramic engineering and the engineering properties of advanced ceramic products. Lecture. (Formerly EGX 524.)

EMA 4205 (EGX 428) STRENGTHENING PROCESSES IN MATERIALS (3) PR: EGX 402. Introduction to the separate and combined effects of the primary strengthening mechanisms in materials. Applications to real material systems such as steels, titanium, beryllium, nickel and refractory metal alloys; and composites. Lecture.

ENV 4622 (EGX 435) WATER RESOURCES ENGINEERING I (4) PR: EGB 343. A study of the engineering principles involved in the sustaining and managing of the quality and quantity of water available for human activities with particular emphasis on hydrology and hydraulics. Lecture. (Formerly EGX 535.)

ENV 4623 (EGX 436) WATER RESOURCES ENGINEERING II (3) PR: EGB 343. A study of the engineering principles involved in the sustaining and managing of the quality and quantity of water available for human activities with particular emphasis on water uses, engineering economy, and regional water resource development. Lecture. (Formerly EGX 536.)

ENV 4417 (EGX 437) URBAN WATER SYSTEMS (4) PR: EGX 435. A study of the engineering principles involved in the design and operation of urban water supply systems, urban drainage systems, urban waste water collection systems and urban waste water treatment systems.

ECI 4633 (EGX 438) ADVANCED HYDROLOGY LABORATORY (3) PR: EGX 437. Practical experience in the solution of hydrologic problems including data collection, data processing, and the application of numerical computer models to watersheds.

ENV 4111 (EGX 439) INTRODUCTION TO AIR POLLUTION CONTROL (4) PR: EGB 322 or CI. Behavior and effects of atmospheric contaminants and the principles of measuring measurements in the air environment are studied. Basic concepts of meteorology and control technology are discussed. Regulatory aspects and air pollution standards are covered. Lecture. (Formerly EGX 437.)

EGM 4124 (EGX 440) EXPERIMENTAL MECHANICS I (4) PR: EGB 343. An introduction to the experimental methods used in the study of structures, materials, fluids. Lec.-Lab. (Formerly EGX 504.)

EGM 4125 (EGX 441) EXPERIMENTAL MECHANICS II (4) PR: CI. Review of elasticity, boundary value problems, finite element solutions; static and dynamic applications, circuitry; grid, brittle coating methods. Lec-lab. (Formerly EGX 540.)


CES 4208 (EGX 443) STRUCTURAL DYNAMICS (3) PR: EGX 442. Behavior of structural components and systems when subjected to periodic dynamic loads. Lecture.

EGM 4224 (EGX 450) SOLID MECHANICS IV (3) PR: EGB 341. Dynamics of Elastic Systems, Vibration of rods, plates, shells, structures; Energy and approximate solution techniques, transform techniques. Lecture. (Formerly EGX 550.)

EGM 4260 (EGX 451) VIBRATIONS (3) PR: EGX 405. Wave motion in solids and fluids, thermal and mechanical Shock wave transmission and attenuation; blast loading. Phase-plane analysis. Lecture. (Formerly EGX 551.)

EGM 4610 (EGX 470) ANALYTICAL METHODS IN MECHANICS (3) PR: CI. Development of techniques of applied mathematics to SMF problems; partial differential equations, complex variable, vector and tensor analysis. Lecture. (Formerly EGX 570.)

TTE 4004 (EGX 481) TRANSPORTATION I (4) PR: EGB 401, CI. Introduction to Transportation Engineering. Lecture.

TTE 4006 (EGX 482) TRANSPORTATION II (4) PR: EGX 481. Transportation system planning. Lecture. (Formerly EGB 581.)

ECI 4311 (EGX 485) SOIL MECHANICS I (4) PR: EGB 343. Fundamental and experimental concepts in soil mechanics with emphasis on soil properties, soil moisture, soil structure and shearing strength. Lecture.

ECI 4312 (EGX 486) SOIL MECHANICS II (4) PR: EGX 485. A study of the application of the principles of soil mechanics to problems in soils engineering. Lecture. (Formerly EGB 585.)

--- (EGX 497) INDEPENDENT STUDY (1-5) PR: CI. Specialized independent study determined by the student's needs and interests. May be repeated up to 15 credit hours. (S/U only.)

ECI 4911 (EGX 499) RESEARCH IN SMF (1-4) PR: CC. (Formerly EGB 599.)

EGM 5814 (EGX 545) VISCOUS FLOWS (3) PR: EGB 346. Formulation of problems in the flow of viscous fluids. Mathematical methods and techniques of solutions.

EGM 5817 (EGX 546) POTENTIAL FLOW (3) PR: EGB 343. Mathematical hydrodynamics, inviscid flow. Lec.-Lab. (Formerly EGX 430.)

EAS 5100 (EGX 547) AERODYNAMICS (3) PR: EGB 343. Fundamentals of compressible flow and flight dynamics. Structural Design; materials consideration. Lecture. (Formerly EGX 438.)

EGM 5611 (EGX 571) CONTINUUM I (3) PR: CI. Development of fundamental problems in solids and fluids from a unified viewpoint; application to ideal media; elastic, plastic, visco-elastic, and fluids. Lecture.
EGM 5655 (EGX 572) CONTINUUM II (3)
PR: EGX 571. Mathematical Theory of elasticity. Two dimensional problems in plane stress and plane strain using cartesian and curvilinear coordinates; three dimensional applications to torsion, bending and semi-infinite solids. Lecture.

EGM 5562 (EGX 573) MECHANICS OF COMPOSITE MATERIALS (3)

EGM 5352, 5353 (EGX 575, 576) FINITE ELEMENT METHODS I, II (3,3)

EGM 6796 (EGX 610) STRESSED SURFACE STRUCTURES (5)

CES 6217 (EGX 611) STRUCTURAL STABILITY (5)

CES 6336 (EGX 613) STRUCTURAL OPTIMIZATION (5)
PR: EGX 411, 412. Use of optimization techniques in the design of structures including use of the digital computer as a design aid. Lec.-lab.

CES 6508 (EGX 616) ADVANCED STRUCTURAL DESIGN (5)
PR: EGX 412, 414. A study of design of more complicated structural systems such as curved bridges, orthotropic bridges, tall buildings, towers, suspension structures. Lecture.

EMA 6236 (EGX 620) DISLOCATION STRUCTURES AND PROPERTIES OF ENGINEERING MATERIALS (3)
PR: EGX 402 and EGX 423. Introduction to the separate and combined effects of the primary strengthening mechanisms in materials. Dislocation structures, nucleation and growth phenomena, phase transformations and principles of composite materials. Lecture.

EMA 6206 (EGX 621) HIGH TEMPERATURE REACTIONS OF ENGINEERING MATERIALS (3)

EMA 6326 (EGX 622) CORROSION OF ENGINEERING MATERIALS II (3)

EGM 6136 (EGX 623) ADVANCED X-RAY METHODS (4)
PR: CI. X-Ray diffraction analytical and experimental studies of defects, texture, residual stress, crystal and polycrystalline aggregates. Lec.-lab.

EGM 6818 (EGX 630) ADVANCED FLUID MECHANICS I (4)

EGM 6856 (EGX 631) ADVANCED FLUID MECHANICS II (3)

ECI 6239 (EGX 635) FREE SURFACE FLOW (4)
PR: EGX 403 or CI. Fundamental and applied aspects of free surface flow, including river hydraulics, canal flow and open channel design. Lecture.

ECI 6633 (EGX 637) HYDROLOGIC MODELS (4)
A study of the theoretical principles of hydrologic modeling and an examination of various numerical hydrologic models available. Students will be required to develop and apply computer models.

EES 6203 (EGX 639) WATER QUALITY FOR ENGINEERS (3)
PR: CI. An introduction to the form, structure and biochemical activities of the important microorganisms which are essential to biological treatment processes for agricultural, domestic and industrial wastewater.

EMA 6126 (EGX 640) EXPERIMENTAL MECHANICS III (4)

EMA 6127 (EGX 641) EXPERIMENTAL MECHANICS IV (4)

EMA 6128 (EGX 642) EXPERIMENTAL MECHANICS V (4)

EMA 6129 (EGX 643) EXPERIMENTAL MECHANICS VI (4)

EGM 6261 (EGX 650) SOLID MECHANICS V (3)

EGM 6451 (EGX 651) NONLINEAR DYNAMICS (3)

ECI 6206, 6207 (EGX 660, 661) HYDROSPACE ENGINEERING I, II (3,3)
PR: CI. Advanced analysis of structural, material and fluid systems for marine environment, including underwater acoustics. Lecture.

ECI 6208 (EGX 662) COASTAL AND ESTUARY MODELING (3)
PR: CI. Modeling of coastal and estuary systems, currents, tide heights, sediment transport, erosion, data collection, temperature distribution, sources and sinks. Special emphasis on Florida. Lecture.

EGM 6675 (EGX 670) CONTINUUM MECHANICS III (3)
PR: CI. Theory of Plasticity. Initial and subsequent yield surfaces, incremental and deformation theories, flow theories; problems in ideal plasticity, strain hardening and slip line fields. Lecture.

EGM 6676 (EGX 671) CONTINUUM MECHANICS IV (3)

EGM 6643 (EGX 672) NUMERICAL METHODS IN ENGINEERING ANALYSIS (3)
PR: CI. Application of computational and mathematical techniques and principles to advanced engineering problems concerning structures, materials, and fluids. Lecture.
EGM 6656 (EGX 673) ADVANCED ELASTIC ANALYSIS (3)
PR: CI. Contemporary elasticity theory and applications. Lecture.

EGM 6391 (EGX 674) APPLIED TENSOR ANALYSIS (3)
PR: CI. Tensor analysis applied to structures, materials, fluids. Lecture.

ENV 6645 (EGX 675) WATER RESOURCES SYSTEMS I (3)
PR: EGX 436. The planning, design, and operation of water resource systems by the use of systems analysis and operations research techniques. Lecture.

ENV 6646 (EGX 676) WATER RESOURCES SYSTEMS II (3)
PR: EGX 675. The planning, design and operation of water resource systems by the use of systems analysis and operations research techniques. Lecture.

ENV 6439 (EGX 677) URBAN WATER TREATMENT THEORY AND DESIGN (4)
PR: EGX 435 or CI. A study of the theory of water treatment and the relation of theory to analysis and design practice. Emphasis is given to unit processes. The seminar is devoted to the design and analysis of specific water treatment facilities.

ENV 6539 (EGX 678) URBAN WASTEWATER TREATMENT THEORY AND DESIGN (4)
PR: CI. A study of the theory of wastewater treatment and the relation of theory to analysis and design practice. Emphasis is given to unit processes. The seminar is devoted to the design and analysis of specific wastewater treatment works.

ENV 6007 (EGX 679) ENVIRONMENTAL PLANNING (4)
PR: EGX 436 or CI. Study of the comprehensive application of environmental control and protection techniques to the problems of environmental quality. Important aspects include air and water quality, amenities, waste management, land use practice, control of noise, and natural ecological factors. A design or analysis problem is an integral part of the course.

CES 6915 (EGX 681) DIRECTED RESEARCH (var.)
PR: GR. Master's level. Repeatable. (S/U only.)

ECI 6939 (EGX 692) SMF SEMINAR (1-4)
PR: CC.

ECI 6933 (EGX 693) SPECIAL TOPICS IN SMF (1-4)
PR: CC.

CES 6938 (EGX 694) GRADUATE INSTRUCTION METHODS (1-5)
Special course to be used primarily for the training of graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

CES 6939 (EGX 695) GRADUATE RESEARCH METHODS (1-5)
Special course to be used primarily for the training of graduate research assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

(EGX 697) INDEPENDENT STUDY (var.)
Independent study in which students must have a contract with an instructor. Repeatable. (S/U only.)

ECI 6917 (EGX 699) THESIS: MASTER'S (var.)
Repeatable. (S/U only.)

CES 7915 (EGX 781) DIRECTED RESEARCH (var.)
PR: GR. Ph.D. level. Repeatable. (S/U only.)

ECI 7980 (EGX 799) DISSERTATION: DOCTORAL (var.)
PR: Must be admitted to Doctoral Candidacy. Repeatable. (S/U only.)

Computer Service Courses (ESC)
COC 3300 (ESC 301) INTRODUCTION TO COMPUTERS I (3)
Basic principles of computer operation, program structure, machine and assembly language.

COP 3110 (ESC 302) COMPUTER PROGRAMMING-FORTRAN (3)
PR: ESC 301. Programming of scientifically oriented problems using FORTRAN. Introduction to the use of the systems library.

COP 3120 (ESC 303) COMPUTER PROGRAMMING-COBOL I (3)

COP 3121 (ESC 304) COMPUTER PROGRAMMING-COBOL II (3)
PR: ESC 303. Advanced applications of COBOL. Development of matrix structures, subscripting and data manipulating techniques as used in comprehensive data processing problems.

COP 3160 (ESC 307) COMPUTER PROGRAMMING-RPG (3)
PR: ESC 301. Analysis, design and implementation of data processing systems using RPG.

COP 3130 (ESC 308) COMPUTER PROGRAMMING-PL/I (3)
PR: ESC 301. Programming of both business and scientifically oriented problems. Manipulation of data records. Control sequencing and transmission of data.

COP 3340 (ESC 309) COMPUTER PROGRAMMING-GPSS-SIMSCRIPT (3)
PR: ESC 302 or equivalent. SIMSCRIPT and GPSS will be used to implement and analyze general types of simulation.

CDA 3101 (ESC 310) INTRODUCTION TO COMPUTERS II (3)
PR: ESC 301, 302. Component parts of a computer system. Internal representation and manipulation of data and program instructions. Algorithms and flowcharting. Programming languages and systems. (No credit for engineering majors.)

CDA 3102 (ESC 311) INTRODUCTION TO COMPUTERS III (3)
PR: ESC 310. Continuation of the material in ESC 310. (No credit for engineering majors.)

CDA 3042 (ESC 312) INTRODUCTION TO COMPUTERS IV (3)
PR: ESC 311. Continuation of the material in ESC 311. (No credit for engineering majors.)

CRM 5115 (ESC 501) COMPUTER SYSTEMS (3)
PR: ESC 302 or equivalent. Study of computer systems components, I/O devices, memory devices, theory of computer operation. (Not available to students who have taken ESC 310, 311 and 312.)

COP 5401, 5402 (ESC 502, 503) COMPUTER LANGUAGES AND COMPUTATION I, II (3,3)

CAP 5812 (ESC 551) COMPUTERS FOR RESEARCH I (3)
PR: Graduate Student Status. The use of FORTRAN IV and WAFIV languages in solving research problems.

CAP 5813 (ESC 561) COMPUTERS FOR RESEARCH II (3)
PR: ESC 551 or equivalent. Continuation of the material covered in ESC 551. Use of computer library programs and plotting equipment.

Engineering Technology (ETK)
ETI 4600 (ETK 401) INDUSTRIAL SYSTEMS (3)
Introduction to organizational planning and control functions in industrial systems.
ETI 4614 (ETK 421) PRINCIPLES OF INDUSTRIAL OPERATIONS I
PR: ETK classification or CC. Techniques of work measurement and methods design.

ETI 4644 (ETK 422) PRINCIPLES OF INDUSTRIAL OPERATIONS II
PR: ETK classification or CC. Techniques of production control and inventory control.

ETI 4661 (ETK 423) PRINCIPLES OF INDUSTRIAL OPERATIONS III
PR: ETK 401, ETK 421, ETK 422. Techniques of plant location and layout.

ETE 4533 (ETK 431) FUNDAMENTAL TOPICS IN POWER GENERATION
PR: Enrollment in Engineering Technology Program or CI. Introduction to thermodynamics, forms of energy and energy equations, processes of a perfect gas, thermodynamic cycles, properties of steam, Rankine Cycle, equipment survey, heat transfer, fluid flow, combustion and mixtures of gases and vapors.

ETM 4610 (ETK 441) FUNDAMENTAL TOPICS IN AIR CONDITIONING
PR: Enrollment in Engineering Technology Program or CI. Introduction to thermodynamics, forms of energy and energy equations, processes of a perfect gas, thermodynamic cycles, refrigeration cycles, properties of refrigerants, heat transfer and fluid flow, mixtures of gases and vapors, preliminary psychrometrics and analysis of motors.

ETM 4750 (ETK 443) AIR CONDITIONING SYSTEMS DESIGN I
PR: ETK 441 or CI. Heating and Air Conditioning Load Calculations, design of packaged air conditioning systems, system selection, equipment selection and installation, ductwork design and air distribution, use of outside air with problems in bypassing and recirculation.

ETM 4750 (ETK 444) AIR CONDITIONING SYSTEMS DESIGN II
PR: ETK 443 or CI. Design of applied air conditioning systems, advanced load calculations, system selection, chilled water systems, multizone systems, equipment survey: coils, chillers, fans and pumps, associated electrical equipment, controls, humidification, dehumidification, and installation.

ETM 4930 (ETK 445) AIR CONDITIONING DESIGN SEMINAR
PR: ETK 444. Consideration of the total air conditioning system from the view of design engineer, client, and contractor. Specification writing, load calculation, system selection and installation, and cost criteria.

ETG 4504 (ETK 451) FUNDAMENTAL TOPICS IN CONSTRUCTION TECHNOLOGY I
PR: MTH 213 or equivalent. Introduction to the principles of statics, equilibrium of rigid bodies, friction, strength of materials and application of materials and their properties in design of structures.

ETC 4420 (ETK 452) FUNDAMENTAL TOPICS IN CONSTRUCTION TECHNOLOGY II
PR: ETK 451. Selection and application of materials in construction technology with associated consideration of material properties, change of properties and environmental effects.

ETM 4700 (ETK 453) CLIMATE CONTROL IN BUILDINGS
PR: Enrollment in Engineering Technology Program or CI. Heat and moisture in the atmosphere and human comfort, heat loads, heat sources, heat and ventilation distribution in spaces, air conditioning and air distribution, control of temperature and humidity.

BCN 4570 (ETK 454) ACOUSTICS IN CONSTRUCTION TECHNOLOGY
(2) Fundamentals of architectural acoustics, behavior of sound in closed spaces, noise control, and noise reduction.

EVS 4650 (ETK 455) SANITARY ENGINEERING IN CONSTRUCTION TECHNOLOGY
(2) Water, water systems, and water supply. Sanitation and waste disposal, piping systems for hot and cold water, plumbing for sewage disposal and storm drainage.

ETG 4930 (ETK 480) SPECIAL TOPICS IN TECHNOLOGY I
PR: CC.

ETG 4930 (ETK 481) SPECIAL TOPICS IN TECHNOLOGY II
PR: CC.

ETG 4930 (ETK 482) SPECIAL TOPICS IN TECHNOLOGY III
PR: CC.

--- (ETK 497) INDEPENDENT STUDY
PR: CI. Specialized independent study determined by the students' needs and interests. May be repeated up to 15 credit hours. (S/U only.)

ETE 5100 (ETK 522) INTRODUCTION TO ELECTRONICS FOR SCIENTISTS
(5) Basic electronic devices and instruments, dc and ac circuits, diodes and power supplies, transistor, circuits, integrated circuits, laboratory instruments, transducers and special instruments. (2 three hour lecture labs, 1 two hour problem discussion). No credit toward graduate degree requirements.

ETG 6930 (ETK 601) SPECIAL TECHNICAL TOPICS I
PR: CC.

ETG 6930 (ETK 602) SPECIAL TECHNICAL TOPICS II
PR: CC.

ETG 6930 (ETK 603) SPECIAL TECHNICAL TOPICS III
PR: CC.

The first number is the State Common Course Number.

ENGLISH (ENG)


ENC 0013 (ENG 098) DEVELOPMENTAL ENGLISH
(3) Instruction and practice in the review of the fundamentals of English. Includes developmental work in English as applied in writing with emphasis on grammar, punctuation, mechanics of expression and sentence structure. Students completing this course will by-pass ENG 101.

REA 0102 (ENG 099) DEVELOPMENTAL READING
(3) Designed to help students develop maximum reading efficiency, the course includes extensive instruction and laboratory
practice in the improvement of adequate rates of reading, vocabulary, and comprehensive skills. An independent study approach is also available for students who prefer to assume responsibility for their own progress.

ESL 1422 (ENG 100) ENGLISH AS A SECOND LANGUAGE—COMPOSITION
Practice and drill in basic English sentence patterns, with emphasis on writing, punctuation, vocabulary, and idioms. The course is designed as a service course for foreign students enrolled in the university. Some previous study of English is a prerequisite. (Formerly CBS 100.)

ENC 1102, 1135, 1168 (ENG 101, 102, 103) FRESHMAN ENGLISH
Instruction and practice in the skills of writing and reading. Courses must be taken in numerical sequence. Credit for Freshman English may be earned by examination. (Formerly CBS 101, 102)

REA 2303 (ENG 200) SPEED READING DEVELOPMENT
A course designed to develop speed reading techniques on various levels of difficulty. Emphasis is placed on comprehension via numerous practice drills. Will not be counted toward the English major. (S/JU only.) (Formerly ENG 131.)

ENG 2300 (ENG 211) CURRENT NOVELS
A study of major British and American novels since WW II; attention will be given to the cultural influences and recent literary trends. Will not be counted toward the English major. (Formerly ENG 302.)

ENG 2460 (ENG 212) CURRENT DRAMA
A study of recent forms and themes in drama from Theatre of the Absurd to the present, including works of such playwrights as Beckett, Ionesco, Genet, Pinter, and Albee. Will not be counted toward the English major. (Formerly ENG 303.)

ENG 2231 (ENG 213) CURRENT SHORT FICTION
Traditional and experimental short stories of this generation; such writers as Updike, Malamud, O’Connor, Roth, Barth, Ionesco, and Barthelme. Will not be counted toward the English major. (Formerly ENG 303.)

LIT 2000 (ENG 214) INTRODUCTION TO LITERATURE: GENERAL
The nature and significance of literature in its various forms: fiction, drama, poetry; emphasis on the techniques of reading literature for intelligent enjoyment. Will not be counted toward the English major. (Formerly ENG 314.)

ENG 2201 (ENG 215) INTRODUCTION TO LITERATURE: FICTION
An examination of the short story and the novel as literary forms; not limited to any historical period. Will not be counted toward the English major. (Formerly ENG 315.)

ENG 2711 (ENG 216) INTRODUCTION TO LITERATURE: POETRY
How poems work. Stress on the understanding and enjoyment of poems with attention to new forms and techniques; not restricted to any specific period. Will not be counted toward the English major except for those students following the Creative Writing: Poetry option. (Formerly ENG 316.)

ENG 2401 (ENG 217) INTRODUCTION TO LITERATURE: DRAMA
A study of the major forms of drama—tragedy, comedy, melodrama, farce; including the works of such playwrights as Sophocles, Shakespeare, Moliere, Ibsen, Chekhov, and Shaw. Will not be counted toward the English major. (Formerly ENG 317.)

ENL 3030 (ENG 300) HIGHLIGHTS OF BRITISH LITERATURE TO 1750
An introductory course consisting of selected highlights of English literature from the Middle Ages to 1750. (Formerly ENG 311.)

ENL 3041 (ENG 301) HIGHLIGHTS OF BRITISH LITERATURE 1750 TO 1945
An introductory course consisting of selected highlights of English literature from 1750 to 1945. (Formerly ENG 311.)

AML 3010 (ENG 302) HIGHLIGHTS OF AMERICAN LITERATURE TO 1945
An introductory course consisting of selected highlights of American literature from the beginnings to 1945. (Formerly ENG 312.)

ENG 3150 (ENG 306) AMERICAN POPULAR LITERATURE: THE ROARING TWENTIES
An exploration of the interaction of film, literature, and the popular arts in the Roaring Twenties of the U.S. Traces the movement of American culture from Main Street and Spoon River to the Modern Urban Metropolis. Studies of such figures as Fitzgerald, Cummings, Hemingway, Stein, E. A. Robinson, Sandburg, Chaplin, and Bessie Smith.

ENG 3138 (ENG 307) TWENTIETH CENTURY DRAMA AND THE FILM
A study of six to eight major twentieth century plays by such playwrights as Shaw, Beckett, Williams, Chekhov, Sartre, O’Neill, Miller, Hansberry, and Ionesco, and the translation of these plays into the medium of the film.

ENG 3156 (ENG 308) MODERN LITERATURE, FILM, AND THE POPULAR ARTS
Exploration into the nature and function of modern literature, film, and some of the popular arts like fantasy, westerns, science fiction, war stories, and detective stories. The works of such writers as Vonnegut, Tolkien, Thurber, Heller, Barthelme, Berger, and Kesey are examined.

ENG 3134 (ENG 309) SHAKESPEARE: TEXTS AND FILMS
An introduction to the art of William Shakespeare through a comparative analysis of four of his most famous dramas and modern film adaptations of them; Hamlet, King Lear, Romeo and Juliet and Henry V.

ENG 3133 (ENG 310) SHAKESPEARE I
Reading of eight to ten representative plays, with special attention to developing the students’ ability to read and interpret the text. (Formerly ENG 411.)

ENG 3010 (ENG 311) EARLY ENGLISH LITERATURE
A survey of representative works of poetry, prose, and drama of the Old English, Middle England, and early Renaissance to 1557, including Beowulf, Chaucer, Malory, More, Hooker, Skelton, Wyatt, among others. (Formerly ENG 201.)

ENG 3320 (ENG 312) LITERATURE OF THE ENGLISH RENAISSANCE
A survey of representative works of poetry, prose, and drama of the English Renaissance, from approximately 1558 to 1649, including Sidney and Spenser to Donne and Marvell, with special attention to the emergence of the New Poetry. (Formerly ENG 201.)

ENG 3351 (ENG 313) THE RISE AND DECLINE OF NEOCLASSICAL LITERATURE
A survey of Neoclassical English literature beginning with Marvel and the late work of Milton, and ending with the late Neoclassicism of Johnson, Boswell, and Goldsmith. (Formerly ENG 202.)

ENG 3401 (ENG 314) ROMANTIC LITERATURE
The poetry and poetics of Blake, Wordsworth, Coleridge, Byron, Shelley, and Keats; with attention to the lesser figures, the eighteenth century background, and the continuing importance of romantic thinking in contemporary affairs and letters. (Formerly ENG 202, 203.)

ENG 3430 (ENG 315) VICTORIAN AND EDWARDIAN LITERATURE
A survey of representative figures of the Victorian and Edwardian periods, ending in 1914, including poetry, prose, and
194 ENGLISH

The first number is the State Common Course Number

ENL 3441 (ENG 316) MODERN BRITISH LITERATURE FROM 1914 TO 1945 (5)
Survey of poetry, drama, and fiction of such writers as Eliot, Yeats, Thomas, Conrad, Shaw, Joyce, Lawrence, Huxley, Woolf, Forster, Waugh, Owen, Auden, O'Casey, among others. (Formerly ENG 307.)

LIT 3150 (ENG 317) CONTEMPORARY BRITISH AND AMERICAN LITERATURE FROM 1945 TO THE PRESENT (5)
An introduction to the fiction, poetry, and drama of such writers as Beckett, Ginsberg, Nabokov, Roethke, Plath, Vonnegut, Welty, Malamud, Durrell, Maier, MacLeish, and others. (Formerly ENG 305.)

AML 3102 (ENG 330) ROMANTIC AMERICAN LITERATURE FROM 1860 TO 1912 (5)
A study of the thought and art in poetry and prose of representative writers of the American Romantic period, with emphasis upon Emerson, Thoreau, Poe, Hawthorne, and Melville. (Formerly ENG 305.)

AML 3108 (ENG 331) AMERICAN LITERATURE FROM 1860 TO 1912 (5)
A study of representative works of selected American Realists and early Naturalists, among them Whitman, Dickinson, Twain, James, Howells, Crane, Dreiser, Wharton, Robinson. (Formerly ENG 306.)

AML 3112 (ENG 332) MODERN AMERICAN LITERATURE FROM 1912 TO 1945 (5)
A study of poetry, drama, and fiction by such writers as Pound, Fitzgerald, Hemingway, Faulkner, Cummings, Williams, Anderson, Lewis, Steinbeck, Wright, Wolfe, West, Stevens, Henry Miller, and others. (Formerly ENG 307.)

LIT 3252 (ENG 340) LITERATURE OF THE WESTERN WORLD: ANCIENT (5)
The Bible, the best modern English translations of Homer, Aeschylus, Sophocles, Euripides, Aristophanes, Plato, or others among the Greeks; of Virgil, Ovid, Juvenal, Sappho, Petronius or others among the Romans. (Formerly ENG 335.)

LIT 3254 (ENG 341) LITERATURE OF THE WESTERN WORLD: MEDIEVAL, RENAISSANCE, AND NEOCLASSICAL (5)
A study in English of such writers as Dante, Boccaccio, Machiavelli, Rabelais, Montaigne, Moliere, among others, and of their cultural and intellectual settings. (Formerly ENG 335, 336).

LIT 3257 (ENG 342) LITERATURE OF THE WESTERN WORLD: MODERN (5)
A study in English of Voltaire, Rousseau, Goethe, Baudelaire, Tolstoy, Mann, Lorca, Brecht, or others; the great literary traditions of Romanticism, Naturalism, and Symbolism.

ENG 3371 (ENG 343) MODERN EUROPEAN NOVEL (5)
A study of the Modern European novel in translation as it developed from the 19th century to the present, including such writers as Dostoevsky, Flaubert, Kafka, Hesse, Camus, and Solzhenitsyn. (Formerly ENG 437.)

ENG 3294 (ENG 345) MODERN SHORT NOVEL (5)
A study of the novella from the 19th century to the present. Writers to be included will be: Flaubert, Conrad, Lawrence, Mann, Kafka, Bellow, Roth, and others.

ENC 3466 (ENG 350) ADVANCED EXPOSITORY WRITING (5)
A course teaching the techniques for writing effective prose, excluding fiction, in which student essays are extensively criticized, edited, and discussed in individual sessions with the instructor.

ENC 3486 (ENG 351) NARRATION AND DESCRIPTION (5)
Writing short papers in narration and description, and the personal essay; analyzing selected essays to heighten sensitivity to language. (Formerly ENG 321.)

CRW 3321 (ENG 352) THE WRITING OF POETRY (5)
Introduction to the writing of poetry. This course will introduce the student to a variety of forms and techniques in the writing of poetry.

CRW 3330 (ENG 353) IMAGINATIVE WRITING: FICTION (5)
PR: ENG 351. Introduction to the writing of fiction. This course will introduce students to the variety of forms and techniques in the writing of imaginative prose.

LIT 3332 (ENG 370) BLACK LITERATURE (5)
A study of Black American literature from the nineteenth-century to the present, including the works of such writers as W. E. B. DuBois, Jean Toomer, Langston Hughes, Richard Wright, Ralph Ellison, LeRoi Jones, and Nikke Giovanni.

LIT 3323 (ENG 372) AMERICAN INDIAN LITERATURE (5)
A survey of native American Literature from pre-Columbian religious and folk literature to the current voices in the pan-Indian movement.

LIT 3281 (ENG 373) FOLKLORE AND POPULAR LITERATURE (5)
Literature of fairytales, folk songs, ballads, and blues. Perrault, Grimm, Andersen, and others; traditional British and American ballads and folksongs; modern ballads and blues from folk, country, delta, and big city sources; the songs of Bob Dylan and friends. (Formerly ENG 337.)

LIT 3442 (ENG 374) FANTASY AND SCIENCE FICTION (5)
A survey of fantasy and science fiction in England and America from Mary Shelley to the present; includes such writers as Poe, Melville, Ray Bradbury, Arthur C. Clarke, among others.

LIT 3446 (ENG 375) LITERATURE AND THE OCCULT (5)
An introduction to the occult tradition as a major ingredient in English, Continental, and American literature; analysis of the origins, classifications, and areas of the various magic arts from classical times through the present. (Formerly ENG 338.)

LIT 3311 (ENG 376) THE BIBLE AS LITERATURE (5)
Major emphasis on literary types, literary personalities of the Old and New Testaments, and Biblical archetypes of British and American literary classics. (Formerly ENG 319.)

LIT 3451 (ENG 377) RELIGIOUS AND EXISTENTIAL THEMES (5)
Theological and philosophical ideas, allusions, and symbols in the writings of Dostoevsky, Nietzsche, Mann, Joyce, Eliot, Camus, Sartre, and others. (Formerly ENG 511.)

LIT 3414 (ENG 378) THE IMAGE OF WOMEN IN LITERATURE, I (5)
A study of feminism, antifeminism, sexual identity, the feminine mystique, stereotyped and liberated female images from Sappho through Shakespeare, with special emphasis on how this early literature has perpetuated cultural myths, rituals, superstitions, and misconceptions about women. (Also offered as WSP 378.)

LIT 3415 (ENG 379) THE IMAGE OF WOMEN IN LITERATURE, II (5)
A study of feminism, antifeminism, sexual identity, the feminine mystique, stereotyped and liberated female images from the 17th century to the present, with special emphasis on women writers and on the emergence of the women's movement. (Also offered as WSP 379.)

LIT 3930 (ENG 383) SELECTED TOPICS IN ENGLISH STUDIES (1-5)
PR: Sophomore standing. Varying from quarter to quarter, the course examines in depth a predominant literary theme or the work of a select group of writers.
ENG 3111 (ENG 385) MODERN SATIRE AND INVENTIVE (5)
Explores the artistic nature and variety of satire in the 20th century, a period rich in satiric writing. Selections from Strachey, Waugh, Pound, Lowell, Nabokov, Faulkner, Golding and Grass.

ENG 3152 (ENG 387) TWENTIETH CENTURY BEST SELLERS (5)
A study of representative best-selling novels in 20th century America; including such critically acclaimed works as Peyton Place, Lady Chatterley’s Lover, Exodus, and Catcher in the Rye, which have sold in excess of 5,000,000 copies and have served to portray our changing society and to reveal our changing literary taste.

LIT 3541 (ENG 391) LITERATURE OF THE GROTESQUE (5)
A conceptual history of the grotesque in literature from Dante’s Inferno to the madhouse of Beckett’s Watt; including the works of such diverse writers as Goethe, Shakespeare, Poe, Pirandello, O’Neill, Sherwood Anderson, and Carson McCullers.

LIT 3552 (ENG 393) HEROES AND ANTI-HEROES (5)
A study of the patterns in the figure of the hero and the anti-hero to the present time. Readings from then to now include works such as Beowulf, The Iliad, King Lear, Don Quixote (Part I), Don Juan (Canto I), A Farewell to Arms, The Ginger Man, and Catch 22.

LIT 3314 (ENG 395) THE TALMUD AS LITERATURE (5)
An introduction to the artistic elements of one of the great books of the Jewish religion. Emphasis on stories, fables, legends (Aggahah), but some general background in Talmudic structure and history is also provided. No previous knowledge of Judaism or religious texts is required.

REA 3403 (ENG 397) VOCABULARY (4)
A practical course in rapid vocabulary improvement for students in all areas. Stress is on words in context. Will not be counted toward the English major.

ENL 4300 (ENG 400) ANGLO-SAXON LITERATURE (5)
PR: ENG 300 or ENG 311. A study of representative works in translation.

ENL 4311 (ENG 401) MIDDLE ENGLISH LITERATURE (5)
PR: ENG 300 or ENG 311. A study of representative works of the Middle English period with a consideration of the social and historical backgrounds.

ENL 4112 (ENG 402) CHAUCER (5)
PR: ENG 300 or ENG 311. An intensive study of The Canterbury Tales and major critical concerns.

ENL 4331 (ENG 406) SIXTEENTH CENTURY PROSE AND POETRY (5)
PR: ENG 300 or ENG 312. A study of representative prose, including fiction, and the lyric and narrative poetry of Sidney, Spenser, Marlowe, and Shakespeare, together with selected poems of Donne.

ENL 4344 (ENG 407) SEVENTEENTH CENTURY PROSE AND POETRY (5)
PR: ENG 300 or ENG 312. A thematic study of religion, science, and love in Bacon, Browne, Burton, Donne, Herbert, Vaughan, Jonson, Herrick, and Marvell. Close analysis of counter-culture tradition and revolt in an attempt to define “metaphysical,” “baroque,” and “Senecan” styles.

ENG 4421 (ENG 408) ENGLISH DRAMA FROM THE BEGINNINGS TO 1642 (5)
PR: ENG 300 or ENG 312. The emergence of drama in England from its liturgical origins through the mystery and morality plays to its significant achievement in the Renaissance. Excludes Shakespeare; emphasis upon Marlowe, Jonson, Webster, and Middleton.

ENL 4121 (ENG 409) MILTON (5)
PR: ENG 300 or ENG 312. Study of the poetry and major prose of John Milton, with special emphasis on Paradise Lost.

ENL 4134 (ENG 410) SHAKESPEARE II (5)
PR: ENG 310. Three or four of Shakespeare’s greatest plays seen in depth; the close reading of the text, the controversies of interpretation, and the Elizabethan and Jacobean setting.

ENG 4113 (ENG 413) RESTORATION AND EIGHTEENTH CENTURY SATIRE (5)
PR: ENG 300 or ENG 313. A study of selected Neoclassical satires, the techniques of their expression, and the historical conflicts out of which they arose.

ENG 4321 (ENG 414) EIGHTEENTH CENTURY BRITISH NOVEL (5)
PR: ENG 301 or ENG 313. A study of the emergence of modern realistic prose fiction in the eighteenth century, with emphasis on Fielding, Richardson, Smollett, and Sterne. (Formerly ENG 429.)

ENL 4406 (ENG 418) ROMANTIC LITERATURE: FORM, GENRE, AND ARCHETYPE (5)
PR: ENG 301 or ENG 314. An intensive study of one or more formal types of British literature occurring between 1785 and 1832, such as Romantic Nature Poetry, Romantic Historical Novels and Poems, etc. Specific topics will vary.

ENG 4413 (ENG 424) THE POETRY OF THE VICTORIANS (5)
PR: ENG 301 or ENG 315. An intensive study of the works of three or more representative Victorian poets.

ENG 4325 (ENG 425) NINETEENTH CENTURY BRITISH NOVEL (5)
PR: ENG 301 or ENG 315. A study of such major British novelists as Austen, Scott, Thackeray, Dickens, the Brontes, Eliot, Meredith, and Hardy. (Formerly ENG 430.)

AML 4103 (ENG 430) AMERICAN LITERATURE OF THE COLONIAL-FEDERAL PERIOD (5)
PR: ENG 300, ENG 302, or equivalent. The social, philosophic, political, and aesthetic foundations of American literature, from the period of early settlement through the writings of Cooper, Irving, and Bryant. (Formerly ENG 305.)

ENG 4345 (ENG 431) THE AMERICAN NOVEL FROM THE BEGINNINGS TO 1920 (5)
PR: ENG 302, ENG 330, or ENG 331. A study of major American novelists through representative novels. Authors studied may include Cooper, Hawthorne, Melville, James, Twain, Dreiser, and others. (Formerly ENG 425.)

ENG 4453 (ENG 432) AMERICAN DRAMA (5)
PR: One course in American Literature. A historical-analytical study of American drama from the 19th century to the present. Included are such playwrights as Boker, Boucicault, Herne, O’Neill, Howard, Rice, Hellman, Williams, Miller, Albee, and Hansberry. (Formerly ENG 426.)

ENG 4223 (ENG 435) MODERN AMERICAN FICTION FROM 1920 TO 1945 (5)

ENG 4227 (ENG 436) MODERN BRITISH FICTION FROM 1900 TO 1945 (5)
PR: ENG 301 or ENG 316. A critical study of British fiction from 1900 to 1945, with emphasis on such writers as Conrad, Lawrence, Joyce, Woolf, Forster, Huxley, Waugh, and others.

ENG 4224 (ENG 437) CONTEMPORARY AMERICAN FICTION FROM 1945 TO THE PRESENT (5)
PR: One course in American literature. A critical study of American fiction from the war novel to the Absurd. The course will consider the impact of naturalism, science, existentialism, surrealism. Includes such writers as Mailer, El-