516: An Introduction to Group Processes. 0-3-3. Preq., COUN 508. Emphasis is on providing students with a knowledge of group dynamics, and learning basic group counseling techniques under supervision.


520: Case Studies in Counseling. 1-3 hours credit. Preq., COUN 508 and consent of instructor. Preparation and use of case studies in counseling.

521: Seminar: Current Psychological Literature. 1-3 hours credit. May be repeated. Preq., COUN 508 and consent of instructor. Students are required to do extensive reading on selected topics in psychology.

522: Field Work in Counseling. 3 hours credit (6). Preq., COUN 518 and consent of instructor. Supervised study, observation, and practice in selected employment settings.

523: Elementary School Guidance. 0-3-3. A review of the principles and organizational patterns of guidance services at the elementary school level.

525: Advanced Techniques of Counseling. 3-2-3. Preq., COUN 518 and consent of instructor. Further experiences in advanced counseling techniques appropriate to various counseling theories.

526: Problems in Guidance. 3 hours credit (6). Special conferences, workshops, and seminars as requested by elementary and secondary school personnel. May be repeated for a maximum of 6 hours credit.

527: Addiction Counseling. 0-3-3. An introduction to the field of Addiction Counseling. Emphasis is placed on recognition and identification of the addicted as well as basic treatment techniques.

528: Advanced Addiction Counseling. 3-2-3. Preq., COUN 527. A methods course intended to equip the student with a basic conception of various therapeutic modalities.

529: Cross-cultural Counseling. 0-3-3. Investigation of the development of cultural identity and techniques for appropriate interactions with clients from different cultural groups.

530: Practicum. 5-1-3. Open only by application. Supervised professional activity in the student's major field. (Minimum 3.0 GPA required)

531: Internship. 20-1-3 (6). Preq., COUN 530 or equivalent and permission of adviser. Advanced supervised counseling practice in a setting appropriate to the student's professional development.

532: School Counseling Practicum. 5-1-3. Open only by application. Supervised professional activity in a school setting. (Minimum 3.0 GPA is required)

590: Ethics and Professional Practice. 0-3-3. Preq., COUN 508. An in-depth investigation of ethical and legal issues, as well as technical concerns, related to the professional practice of counseling.

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**ECONOMICS (ECON)**

201: Economic Principles and Problems. 0-3-3 each. A study of basic economic principles and problems, with particular reference to the operation and social implications of the American economic system. (201-Macro).

202: Economic Principles and Problems. 0-3-3 each. A study of basic economic principles and problems, with particular reference to the operation and social implications of the American economic system. (202-Micro).

215: Fundamentals of Economics. 0-3-3. (Not open to students who have had ECON 201-202.) A survey of the major principles of economics designed for the student whose curriculum requires only one quarter of economic principles.

312: Monetary Economics. 0-3-3. Preq., ECON 202 or 215. A study of the causes of changes in the supply of money and rate of spending and the effects of these changes on production, employment and the price level.

344: International Economics. 0-3-3. Preq., ECON 201 or 215 or consent of instructor. Introduction to modes of business operations and the economic factors which affect international trade. Study of principles, practices, and theory of how and why nations trade.

401: Internship in Economics I. 1 hours credit. (Pass/Fail) Preq. consent of instructor and senior standing. On site, supervised, structured work experiences in the field of business.

402: Internship in Economics II. 3 hours credit. (Pass/Fail) Preq. consent of instructor and senior standing. On site, supervised, structured work experiences in the field of business.

403: Economics of Industrial Organization. 0-3-3. Preq., ECON 202 or 215. Relationships between structure, conduct, and performance of industries using theoretical and empirical material: Antitrust and environmental regulation, R&D, product advertising and pricing are examined. (G)

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406: Comparative Economic Systems. 0-3-3. Preq., ECON 202 or 215. A study of alternative economic systems such as capitalism, socialism, communism, and "mixed" in theory and practice.

408: Intermediate Economic Theory. 0-3-3. Preq., ECON 202 or 215, or consent of instructor. An introduction to theoretical economic analysis; intensive study of price, production, and distribution theories. (G)

409: Managerial Economic Analysis. 0-3-3. Preq., senior standing or consent of instructor. Lectures and cases emphasizing economic principles as used in managerial decision-making. Includes analysis of demand, cost and price relationships, price decision, risk and uncertainty, and capital investment. (G)


418: Labor Economics. 0-3-3. Preq., ECON 202 or 215 or consent of the instructor. Fundamentals of labor market operations, economic analysis of labor legislation; impact of American unions upon the firm's decision making and the national economy. (G)

437: Aggregate Economic Analysis. 0-3-3. Preq., ECON 312. Macroeconomics; intensive study of economic theory of national income analysis, interest, employment, and fiscal policy. (G)

510: Managerial Economics. 0-3-3. Analysis and cases; actual case studies in the application of price and distribution theory to problems of the firm.

512: Current Economic Policies. 0-3-3. An investigation of modern economic concepts in the United States through a study of policies advanced by various economic groups tending to shape economic action.

513: Macroeconomic Theory I. 0-3-3. Preq., ECON 437 or other acceptable background course(s). Analysis of monetary factors and government revenue-expenditure factors affecting the general level of prices, investment decisions, interest rates, national income and employment.

520: Advanced Microeconomic Theory. 0-3-3. Preq., ECON 408 or other acceptable course(s). Value and distribution theory emphasizing applications to business operations and public policy issues.

532: Econometric Methods. 0-3-3. Preq., QA 432 or other acceptable courses. The use of statistical techniques in economic research including estimation and interpretation of parameters of economic models.


541: Microeconomics: Business Conditions Analysis. 0-3-3. Preq., ECON 510. Detailed review of techniques, procedures, and data sources used by business economists to gather, analyze, interpret and forecast microeconomic variables.

542: Seminar on Business Economics Problems. 0-3-3. Preq., ECON 510 or equivalent or consent of instructor. Students will develop and present an analytical study in micro- or macroeconomics in a form expected of a business economist's presentation to corporate management.

550: Directed Study in Economics. 0-3-3 each. Hours and credits to be arranged. Consent of instructor and approval of department head required. Special problem or specific area of economics.

613: Macroeconomic Theory I. 0-3-3. Preq., ECON 437 or other acceptable background course(s). Requires Doctoral standing. May require additional class meetings. Analysis of monetary factors and government revenue-expenditure factors affecting the general level of prices, investment decisions, interest rates, national income and employment. Credit will not be given for ECON 613 if credit is given for ECON 513.

620: Advanced Microeconomic Theory. 0-3-3. Preq., ECON 408 or other acceptable course(s). Requires Doctoral standing. May require additional class meetings. Value and distribution theory emphasizing applications to business operations and public policy issues. Credit will not be given for ECON 620 if credit is given for ECON 520.

632: Econometric Methods. 0-3-3. Preq., QA 432 or other acceptable courses. Requires Doctoral standing. May require additional class meetings. The use of statistical techniques in economic research including estimation and interpretation of parameters of economic models. Credit will not be given for ECON 632 if credit is given for ECON 532.

641: Microeconomics: Business Conditions Analysis. 0-3-3. Preq., ECON 510. Requires Doctoral standing. May require additional class meetings. Detailed review of techniques, procedures and data sources used by business economists to gather, analyze, interpret and forecast microeconomic variables. Credit will not be given for ECON 641 if credit is given for ECON 541.
EDUCATION (EDUC)

430: Internship in Teaching. 3-0-3 (9). Preq., twelve semester hours professional education. Supervised teaching experience in area(s) of certification in education. (G)

431: School Readiness. 1-3-3. Preq., PSYC 204 and Upper Division standing. Designed to acquaint the student with the appropriate theory, understanding, and methods necessary for beginning school success. Particular emphasis will be on holistic developmental readiness. (G)

460: Methods for Teaching and Testing in ESL. 0-3-3. Preq., Senior standing. Theories and techniques for teaching English as a Second Language and evaluating student performance; emphasis on communicative competence. Also listed as ESL 460.

462: Principles and Problems of Cooperative Education. 0-3-3. Preq., Upper Division standing. The basic principles and philosophies of cooperative vocational education. History and development of cooperative education. (G)

463: Materials and Methods in Teaching Art. 0-3-3. Preq., EDUC 480, Upper Division standing. The planning of a course of art and the methods of presentation of such a course in the elementary and high schools. (G)

466: Materials and Methods of Teaching Instrumental Music. 0-3-3. Preq., EDUC 480. See EDUC 465 for description; emphasis on the instrumental aspects.

472: Individually Guided Education. 0-3-3. Presents the essential concepts, principles, and skills of several individualized instruction models and teacher roles as designers, managers, and evaluators of the teaching-learning process.

501: Problems in Teaching Elementary Science. 0-3-3. A survey of research bearing on problems of organizing, developing, and evaluating the curriculum in science.

502: Problems in Teaching Language Arts in the Elementary School. 0-3-3. A study of the principles, research, methods and materials needed for teaching written and oral forms of communication in elementary and junior high schools.

503: Problems in Teaching Reading. 0-3-3. A study of problems in the teaching of reading in elementary schools. Special emphasis will be given to the development of a reading program, diagnosis, and care of individual needs of pupils, use of materials, research findings, and their applications to methods of instruction.


506: Improving Instruction in English. 0-3-3. A study of the methods of teaching usage and literature, analyses of curricula, selection of materials, research in recent studies in the teaching of English. Special attention will be given to planning units of work, to creative teaching and to a consideration of the needs of youth in area of reading, writing, speaking, and listening.

507: Improving Instruction in High School Mathematics. 0-3-3. The place of mathematics in general education and in specialized fields; professionalized subject matter; modern methods of teaching. Students will become familiar with teaching aids, long-unit assignments, and the construction and use of standardized and teacher-made tests.

508: Improving Instruction in Science. 0-3-3. A study of present-day trends in the teaching of science, content, organization of materials, methods of instruction, student activities, objectives, observation trips, use of textbooks, laboratory work and equipment, evaluation, preparation of unit and lesson plans, projects and student guidance.

509: Improving Instruction in the Social Studies. 0-3-3. A study of the selection and organization of subject matter in social studies, the planning of student activities, the use of instructional materials. Students will prepare unit and lesson plans utilizing community resources.

512: Philosophy of Education. 0-3-3. Designed to trace some of the more important educational problems as they have been affected by social and political facts of history, by contributions of leading educational theorists and by institutional practice.

513: Philosophy of Music Education. 0-3-3. A review of the historical development of music education in America and an analysis of trends in music education from 1930 to the present time.

514: The Learner in Adult Education. 0-3-3. The learner in adult education programs will be examined. Emphasis will be given to the teaching-learning process and the uniqueness of adult learning situations.

515: Administration and Supervision of Adult Education. 0-3-3. General administrative processes, emphasizing program planning and evaluation.

516: Seminar: Crucial Issues in Secondary Education. 0-3-3. Selected readings and research on current, crucial issues in secondary education. Topics will vary from quarter to quarter.

518: History of American Education. 0-3-3. A survey of the development and growth of elementary, secondary, and higher education with emphasis upon American education.

519: Contemporary Issues in Adult Education. 0-3-3. Investigates current problems and future trends in the broad field of lifelong learning.

520: Education for the Older Adult. 0-3-3. Designed as a study of the elderly as a unique group of learners, defining specific needs of the elderly.

521: Assessment of Students and Programs. 0-3-3. Diagnosing and evaluating students and programs within the framework of instruction; emphasis on problem solving in order to improve learning and teaching.

522: Instructional Theory and Practice. 0-3-3. Exploration and investigation of methods and paradigms of instructional theory and delivery; emphasis on creative application of instructional technology and processes that create learning opportunities.

524: Supervision of Student Teaching. 0-3-3. Designed for experienced teachers who are interested in serving as supervising teachers in teaching programs.

526: Curriculum Development. 0-3-3. Application of theory and research of curriculum; issues and trends in curriculum; strategies and techniques for planning curriculum; value and empirical bases for curriculum decisions.

528: Evaluating Pupil Growth. 0-3-3. Methods and procedures in test development, administration, validation, and interpretation.

529: Educational Planning and Accountability. 0-3-3. A study of planning and accountability models in education while emphasizing the essential principles and skills necessary for designing, implementing, and evaluating education plans.

530: Internship in Teaching. 35-0-3 (9). Preq., registration by application only, requires approval of academic advisor and Director of Laboratory Experiences. Supervised teaching experience in area(s) of certification in education. (Pass/Fail)

531: Foundations of Reading. 0-3-3. An in-depth examination of the processes involved in language development from pre-reading through advanced reading skills.

532: Reading Curriculum and Materials Development. 0-3-3. Analysis of reading curriculum and development of instructional materials for various levels of reading ability.

533: Problems in Education. 1-4 hours credit (9). Preq., Consent of the instructor. An advanced course dealing with special problems in the different fields of education.

534: Diagnosis and Evaluation of Reading Difficulties. 0-3-3. Preq., EDUC 503. Causes, diagnosis, evaluation and correction of reading disabilities.


537: Seminar, Problems in Reading. 0-3-3. Preq., consent of instructor. Recent issues, theories, studies and research findings in teaching reading.

538: Supervision and Curriculum Development in Reading. 0-3-3. Construction of an innovative curriculum in reading, plans for implementation of new curriculum, and supervision of the reading program.

539: Advanced Laboratory Practicum in Reading. 7-1-3. Supervised internship in reading.

540: Comparative Education. 0-3-3. A study of the educational systems in Europe, the Orient, and South America.
541: Introduction to Graduate Study and Research. 0-3-3. Experience is gained in the application of techniques of educational research, in writing in acceptable form, and in evaluating research. Required of all master's candidates in education and should be scheduled during the first six hours of graduate work.

542: Statistical Methods in Education. 0-3-3. A study of the statistical methods used by school personnel in the study of educational problems.

543: Adjudication of Instrumental Ensembles. 0-2-2. This course examines in detail a philosophy of the phenomenon of adjudication. It includes practical aspects of evaluation.

545: The New Media in Education. 2-2-3. A study of the uses of new technology with some practical experience in the use of these educational aids.

546: Instructional Media Design and Development. 2-2-3. An investigation of the systems approach to instructional media design, organization, and production.

551: Research and Thesis. Three hours or multiples thereof. Maximum credit allowed is six hours.

564: The Reading Process. 0-3-3. An analysis of the physiological, psychological, and neurological foundations of the reading process.

566: Improving Instruction in Remedial Education. 2-2-3. Focuses on improvement of college level instruction at the remedial/developmental level.

567: Elementary School Curriculum. 0-3-3. A study of principles of curriculum construction in the elementary school. Emphasis is upon selection, organization and evaluation of materials suitable to the elementary school.


569: Teaching Methods for Effective Instruction of Mathematics and Educational Technology. 0-3-3. An in-depth study of mathematics curriculum, instructional methods and materials, and research findings with an investigation of technology usage in the content fields.

570: Teaching Methods for Language Arts. 0-3-3. Provides an in-depth study of the elements of lesson planning and design with emphasis in the teaching of written and oral communication (other than reading).

572: Field Problem and Internship. 0-3-3. A study of principles of teaching and supervision of instruction in the classroom. Emphasis is upon the supervision and evaluation of materials for the classroom.

573: School Principles and Curriculum. 0-3-3. An analysis of the curriculum and principles of learning with additional emphasis on multicultural education, “at risk” students, and classroom management.

574: Change Theory & Innovation in Education. 0-3-3. Preq., Graduate Standing. A study of change theory and how varying factors and circumstances influence the extent of success or failure of planned innovations in public education.

575: Educational Foundations and Public Policy. 0-3-3. An analysis of the links between educational policy and school history with particular emphasis on the historical, philosophical, social, and legal foundations of education.

576: School Principles and Curriculum. 0-3-3. An analysis of the curriculum and principles of learning with additional emphasis on multicultural education, “at risk” students, and classroom management.

577: Teaching Methods for Effective Secondary School Instruction. 0-3-3. An examination of research, resources, and advanced techniques of teaching in secondary schools.

578: Practicum in Education. 10-1-3. Preq., Consent of Director of Laboratory Experiences. Structured laboratory experiences in education. (Pass-Fail)

579: Internship in Education. 9 hours credit. Advanced internship in area(s) of specialization. Minimum of 180 clock hours in direct teaching.

580: Specialist Research and Thesis. Three hours credit or multiples thereof. Maximum credit allowed is six hours.

589: Special Topics. 1-4 hours credit. Preq., graduate standing. Selected topics in an identified area of study in the College of Education.

594: Special Topics. 1-4 hours credit. Preq., graduate standing. Selected topics in an identified area of study in the College of Education.

595: Educational Computer Technology (ECT). 1-4-1. Preq., ECT 445 or equivalent. Exploration of ways to use technology to support standards-based teaching and learning in the classroom.

597: Educational Telecommunications, Networks, & the Internet. 4-1-3. Preq., ECT 500 or equivalent. Examination of methods and resources for integrating the Internet into content area learning.

599: Technology for Teaching Reading/Language Arts. 4-1-3. Preq., ECT 445 or equivalent. Exploration of a variety of technology to support reading/language arts instruction. Includes the design and development of multimedia products.

599: Curriculum and Instruction (EDCI). 100: Early Experiences in Education. 0-1-1. Designed to give high school seniors an overview of the teaching profession from the perspectives of Teacher Education, Health and Physical Education, and Special Education.

102: Reading Skills for College Freshmen. 9-0-3 (9). The course provides individually prescribed instruction in reading skills for college freshmen. The course objective is to help alleviate reading deficiencies, which inhibit effective learning. Non-degree credit.

125: Introduction to Teaching. 1-1-1. An overview of the teaching profession from various perspectives supplemented with structured observations in elementary, middle, and secondary classrooms.

189: Special Topics. 1-4 hours credit. Selected topics in an identified area of study in the College of Education. May be repeated for credit.

194: Special Topics. 1-4 hours credit. Selected topics in an identified area of study in the College of Education. May be repeated for credit.

205: The Computer: A Tool for the Teacher. 0-1-1. Instructional, utility, and management software applications for school use. Development of instructional materials, incorporation of commercially available software into lesson and unit structure.

245: Microcomputer Applications: Tools for Lifelong Learning. 0-3-3. Designed to introduce students to the microcomputer and a variety of software applications that may be useful for study, research, and educational preparation.

289: Special Topics. 1-4 hours credit. Selected topics in an identified area of study in the College of Education. May be repeated for credit.

294: Special Topics. 1-4 hours credit. Selected topics in an identified area of study in the College of Education. May be repeated for credit.

300: Driver Education and Highway Safety. 0-3-3. Investigation of the problems facing drivers, traffic design problems, and the study of the philosophy of driver education.

310: Instructional Technology. 1-3-3. Introduction to instructional media for the classroom. Students evaluate and use computer software and other audio-visual media to develop and support classroom instruction.

320: Materials and Methods for Elementary Science and Social Studies. 0-3-3. Preq., PSYC 204. A course for the study of curriculum, organization and teaching in elementary science and elementary social studies.

351: Materials and Methods in Teaching Modern Language. 0-3-3. Preq., 12 hours of modern languages and EDCU 480. The student will be introduced to the latest techniques of organizing materials and presenting them to high school pupils.

389: Special Topics. 1-4 hours credit. Selected topics in an identified area of study in the College of Education. May be repeated for credit.
341: Literacy for Emergent Learners. 2-1-3. Preq., Upper Division. Designed to acquaint students with appropriate theory, understanding, and methods necessary for the emergent learner with emphasis on the holistic aspects of effective instruction. (G)

342: Kindergarten Education. 1-3-3. Preq., PSYC 204 and Upper Division standing. Course will involve curriculum planning based on principles of child development. Students will become familiar with the curriculum development process by using curriculum documents including instructional units. (G)

343: Special Problems in School Curriculum. 1-4 hours credit. (9). Preq., consent of instructor. Course is designed to deal with selected problems in elementary and secondary schools. (G)

344: Diverse Learners. 2-1-3. Preq., Upper Division. This course provides P-12 teaching candidates with the awareness, knowledge, skill, and disposition to identify, assess, teach, accommodate, and manage the instructional needs of diverse learners. (G)

345: Trends and Issues in Education. 2-1-3. Preq., Upper Division. This course provides PK-12 teacher candidates with the awareness, knowledge, skill, and disposition to identify, assess, teach, and accommodate the changing needs of all learners. (G)

346: Braille I. 1-3-3. Preq., Upper Division or consent of instructor. Students develop proficiency in reading and writing the Braille literary code while developing an understanding of which visually impaired children benefit from Braille reading instruction. (G)

347: Reading/Language Arts Methods. 2-1-3. Preq., Upper Division. Principles, methods, and research pertaining to the teaching of reading and language arts will be emphasized. (G)

348: Instructional Design, Strategies, and Assessment. 2-1-3. Preq., Upper Division. This course will be a generic methods course which explores methods and procedures to assess and facilitate student academic growth. (G)

401: Directed Observation and Pre Student Teaching Experiences. 3 3/4-1-1. Preq., 90 semester hours including professional preparation courses and taken in quarter prior to student teaching. Directed observation, participation, and critique related to the field in which the student plans to student teach.

402: Measurement in Education. 0-2-2. Includes principles of measurement and evaluation, construction of teacher-made tests, and utilization of standardized tests.

403: Materials and Methods of Teaching Reading. 0-3-3. Preq., EDUC 480. Instructional techniques designed to assist the secondary teacher in implementing reading strategies in content courses.

404: Reading Strategies for Secondary School Teachers. 0-3-3. Instructional techniques designed to assist the secondary teacher in implementing reading strategies in content courses.

405: Materials and Methods in Teaching Agricultural Education. 0-3-3. Preq., AGED 460 or consent of instructor. Techniques, requirements, and organization of state curriculum guides and course requirements in agricultural education in public schools. Requirements of the FFA advisor/agriculture teacher. (G)

406: Education Innovations in the Current and Emerging Schools. 0-3-3. Study of educational innovations and their implications.

409: Materials and Methods in Teaching Business Education. 0-3-3. Preq., Upper Division and ACCT 202. A course designed to acquaint the student with the best practices in teaching business subjects. (G)

410: Business and Office Operations. 0-3-3. Methods and procedures in developing and coordinating a cooperative office education program in the secondary school. (G)

415: Multicultural Education. 0-3-3. Preq., Upper Division and PSYC 204. This course provides K-12 education students with the culturally inclusive awareness, skills, and knowledge to meet the diverse needs of learners. (G)

416: Student Teaching. 6-9 hours credit. Meet all qualifications identified in this catalog for teaching level or area of specialization. Student receives appropriate supervised experiences. Total clock hours determined by program. Two hours of seminar. (Pass/Fail).

417: Diagnosis and Correction of Reading Difficulties. 11/4-2-3. Preq., Upper Division, EDUC 424, and PSYC 204. Field-based experience in diagnosing reading problems and recommending appropriate instructional interventions for school children. (G)

420: Practica in Education. 10-1-3. Preq., Consent of Director of Laboratory Experience. Structured laboratory experiences in area(s) of specialization in education. May be repeated for credit. (Pass/Fail)

422: Materials and Methods for Elementary/Middle Mathematics. 0-3-3. Preq., Upper Division and PSYC 204. An examination of the characteristics and objectives of the modern elementary mathematics program is combined with experiences in content, methods, and organizations. (G)

423: Materials and Methods for Elementary/Middle Language Arts. 0-3-3. Preq., Upper Division and PSYC 204, concurrent enrollment required with EDUC 424. A course to enable students to use current principles, research, methods and materials to teach oral, written and reading communication skills. (G)

424: Materials and Methods for Elementary/Middle Reading. 0-3-3, Preq., Upper Division, Reading Methods, and PSYC 204, concurrent enrollment required with EDUC 423. Principles, methods, and research pertaining to the teaching of reading will be emphasized. (G)

425: Materials and Methods for Elementary/Middle Science. 0-3-3. Preq., Upper Division and PSYC 204. A course for the study of curriculum, organization, and teaching of elementary/middle science. (G)

426: Materials and Methods for Elementary/Middle Social Studies. 0-3-3. Preq., Upper Division and PSYC 204. A course for the study of curriculum, organization, and teaching elementary/middle social studies. (G)

427: Software Application in the Classroom. 0-3-3. Operating and using microcomputers for classroom instruction. Computer literacy concepts, and software evaluation are included. (G)

428: Software Application, Teaching Methods, and Intermediate Programming for Teachers. 0-3-3. Preq., a course in BASIC programming. Computer-assisted instructional software, authoring packages, LOGO, and intermediate programming skills for classroom instruction. (G)

429: Administrative Applications of the Microcomputer in Schools. 0-3-3. A course to provide information concerning the administrative users of computers in schools, hardware/software/consultant resources, and methods for developing effective in-service programs. (G)

431: Literacy for Emergent Learners. 2-1-3. Preq., Upper Division. Designed to acquaint students with appropriate theory, understanding, and methods necessary for the emergent learner with emphasis on the holistic aspects of effective instruction. (G)

432: Kindergarten Education. 1-3-3. Preq., PSYC 204 and Upper Division standing. Course will involve curriculum planning based on principles of child development. Students will become familiar with the curriculum development process by using curriculum documents including instructional units. (G)

433: Special Problems in School Curriculum. 1-4 hours credit. (9). Preq., consent of instructor. Course is designed to deal with selected problems in elementary and secondary schools. (G)

434: Diverse Learners. 2-1-3. Preq., Upper Division. This course provides P-12 teaching candidates with the awareness, knowledge, skill, and disposition to identify, assess, teach, accommodate, and manage the instructional needs of diverse learners. (G)

435: Trends and Issues in Education. 2-1-3. Preq., Upper Division. This course provides PK-12 teacher candidates with the awareness, knowledge, skill, and disposition to identify, assess, teach, and accommodate the changing needs of all learners. (G)

436: Braille I. 1-3-3. Preq., Upper Division or consent of instructor. Students develop proficiency in reading and writing the Braille literary code while developing an understanding of which visually impaired children benefit from Braille reading instruction. (G)

437: Reading/Language Arts Methods. 2-1-3. Preq., Upper Division. Principles, methods, and research pertaining to the teaching of reading and language arts will be emphasized. (G)

438: Instructional Design, Strategies, and Assessment. 2-1-3. Preq., Upper Division. This course will be a generic methods course which explores methods and procedures to assess and facilitate student academic growth. (G)

441: Methods of Teaching Kindergarten Children. 1-3-3 Preq., LSCI 201, EDUC 432, PSYC 408, and Upper Division standing. Practical problems in the selection and organization of the curriculum to promote children's learning. Emphasis on planning, selecting equipment, teaching aids, and teaching procedures. (G)

442: Software Application in the Classroom. 0-3-3. Operating and using microcomputers for classroom instruction. Computer literacy concepts, and software evaluation are included. (G)

444: English Grammar in ESL Teaching. 0-3-3. Preq., Senior standing. An analysis of English grammar specifically for developing instructional techniques used in teaching grammar for communicative competence in ESL. Also listed as ESL 454. (G)

445: Improving Instruction in Art. 0-3-3. Identification of problems of teaching art. Emphasis upon philosophy, art materials and techniques, evaluation and curriculum planning.

446: Software Applications in the Teaching of Reading. 1-3 hours credit. (3). The microcomputer is used to prepare software for use in content reading applications and test construction. (G)


448: Instructional Software Design and Development. 0-3-3. Preq., A course in BASIC programming. Methods for teaching computer-related topics and programming techniques for designing instructional modules. (G)

450: Improving Instruction in Art. 0-3-3. Identification of problems of teaching art. Emphasis upon philosophy, art materials and techniques, evaluation and curriculum planning.

451: Software Applications in the Teaching of Reading. 1-3 hours credit. (3). The microcomputer is used to prepare software for use in content reading applications and test construction. (G)


453: Foreign Language Teaching Methods. 0-3-3. Preq., 12 hours of a foreign language. Study of a broad range of foreign language teaching methods; examination of underlying theories and practical applications. Also listed as FLNG 453. (G)

454: English Grammar in ESL Teaching. 0-3-3. Preq., Senior standing. An analysis of English grammar specifically for developing instructional techniques used in teaching grammar for communicative competence in ESL. Also listed as ESL 454.

455: Improving Instruction in the Middle Grades. 0-3-3. A study of the history, philosophy, and nature of the middle school with emphasis on early adolescent physical and educational development and social/emotional problems.

456: Materials and Methods in Teaching Mathematics. 0-3-3. Preq., EDUC 480 and MATH 241, Upper Division standing. The nature of mathematics and methods of teaching. Special emphasis will be placed on the interpretation and solving of reading problems. (G)

457: Materials and Methods in Teaching English. 0-3-3. Preq., EDUC 480, Upper Division standing. The student will be introduced to the best techniques of organizing and presenting English material. (G)

458: Materials and Methods in Speech, Language and Hearing in the Public Schools. 0-3-3. Practical problems in the identification, diagnosis, and treatment of communication disorders in school children,
with emphasis on materials, organization of therapy program and teaching procedures. (G)

459: Materials and Methods in Teaching Social Studies. 0-3-3. Preq., EDUC 480, Upper Division standing. An examination of the character and purpose of social studies is followed by presentation of appropriate teaching suggestions. (G)

460: Internship in Teaching. 35-0-1. Preq., Upper Division and permission of Director of Professional Experiences (Pass/Fail). Teacher candidates meet the student teaching requirement while employed in a teaching position. Supervision by the school principal and university supervisor are required. (G)

461: Performance Based Seminar I. 0-2-2. Preq., concurrent enrollment in EDCI 460. Teacher candidates will meet weekly to address topics responding to observed needs of candidates. (G)

462: Performance Based Seminar II. 0-2-2. Preq., concurrent enrollment in EDCI 460. Teacher candidates will meet weekly to address topics responding to observed needs of candidates. (G)

463: Performance Based Seminar III. 0-2-2. Preq., concurrent enrollment in EDCI 460. Teacher candidates will meet weekly to address topics responding to observed needs of candidates. (G)

464: Materials and Methods in Teaching Science. 0-3-3. Preq., EDUC 480, Upper Division standing. A careful examination of the most advanced methods of organizing the presenting materials in sciences for the secondary school. (G)

465: Materials and Methods of Teaching Vocal Music. 0-3-3. Examines problems which confront the teacher and supervisor of vocal music; e.g., program building, contests, festivals, requisitions, grading, materials, scheduling, and rehearsing.

466: Adaptive Technology for the Visually Impaired. 1-1-1. Preq., Upper Division or consent of instructor. Through demonstrations, hands-on projects, and various guest lectures, student learn to use state of the art technology designed for the blind and/or visually impaired learner. (G)

467: Materials and Methods in Teaching Speech. 0-3-3. Preq., EDUC 480, Upper Division standing. An examination of materials and methods for teaching speech in elementary and secondary schools. (G)

470: Curriculum Development and Design for ESL. 0-3-3. Preq., Senior standing. Selection of objectives, content, task implementation, and pedagogy for teachers of English as a Second Language. Also listed as ESL 470. (G)

471: Classroom Management. 1-3-3. Course emphasizes the application of concepts, principles, and skills necessary for designing, implementing, evaluating, and revising plans for classroom management. (G)

472: Transition and Vocational Procedures. 2-1-3. Preq., Upper Division. Emphasizes transition and vocational models, curricula, strategies, and services. Field-based experiences focus on career exploration, planning, inter-agency collaboration, research, and family involvement. (G)

473: Educational Strategies and Methods for Students with Mild/Moderate Disabilities. 2-1-3. Preq., Upper Division. Procedures, methods, materials, and research-based strategies for students with disabilities (1-12) with emphasis on accommodations, modifications, and Individualized Education Programs (I.E.P.s). (G)

475: Foundations of Education. 0-2-2. An interdisciplinary survey of the development of educational institutions and practices with particular focus upon the influences of social, legal, historical and philosophical thought. (G)

477: Teaching Methods for Effective Instruction of Science and Social Studies. 2-1-3. Preq., Upper Division and PSYC 204. A course for the study of curriculum organization, instructional strategies and materials, and research findings related to PK-8 science and social studies. (G)

480: Principles of Teaching. 0-3-3. An investigation of the principles of teaching as related to the student, curriculum, and the teaching-learning process. (G)

489: Special Topics. 1-4 hours credit (9). Selected topics in an identified area of study in the College of Education. May be repeated for credit. (G)

490: Introduction to Adult Education. 0-3-3. A study of the history, philosophy, objectives and nature of adult and continuing education; emphasis given to the adult as a learner. (G)

491: Reading in Adult Education. 0-3-3. Examines the characteristics of the functionally illiterate adult. (G)

492: Materials and Methods in Adult Education. 0-3-3. Examination of characteristics unique to the adult with emphasis on analysis of the methods and materials available for working with adults. (G)

493: Cross-Cultural Communication for ESL Teaching. 0-3-3. Preq., Senior standing. Concepts of culture and the relationship of language acquisition to the cultural setting with specific application to the teaching of ESL. Also listed as ESL 493. (G)

494: Special Topics. 1-4 hours credit (9). Selected topics in an identified area of study in the College of Education. May be repeated for credit. (G)

495: Social and Psychological Aspects of Blindness. 1-2-3. Preq., Upper Division or consent of instructor. Course explores social and psychological implications of blindness and provides an overview of current and historical practices in the rehabilitation and education of blind individuals. (G)

499: Instructional Strategies and Materials for Teaching Blind Students. 0-3-3. Preq., Upper Division or consent of instructor. Methods and materials for teachers teaching blind children to read. Students will increase personal Braille reading speed, proficiency, and knowledge of the literary Braille code. (G)

EDUCATION LEADERSHIP (EDLE)

527: Public School Organization and Administration. 0-3-3. Introduction to national, state, and local administration; public school finance; principles and practices of administration; administration of special services; national and state legal aspects of public school administration, and administration of school-community relations.


552: Supervision of Instruction in Elementary and Secondary Schools. 0-3-3. A course designed to aid prospective elementary and secondary administrators in theories, principles, and concepts of supervision.

555: School and Community Relations. 0-3-3. Principles of school relations applied to education and the development of school and community understandings.

556: School Law. 0-3-3. State and national aspects and implications of public school law. Special attention is given to cases in both state and federal courts.

557: Elementary School Principals. 0-3-3. Duties and responsibilities in organization, leadership, administration and supervision in the elementary school.

558: Secondary School Principals. 0-3-3. Duties and responsibilities in organization, leadership and administration of the secondary school.


560: School Personnel Administration. 0-3-3. A course to equip the new principal to administrate all school personnel.

565: Differentiated Supervision. 0-3-3. Focuses on improvement of classroom instruction through the building of the relationship between supervision and teaching.

EDUCATIONAL PSYCHOLOGY (EPSY)

472: Vocational Procedures and Practices for Exceptional Students. 0-3-3. Experience-based vocational education; process-oriented curriculum development; planned learning activities; formal assessment procedures; utilization of community resources; occupational preparation; review of exemplary programs. (G)

475: Advanced Procedures in Special Education. 0-3-3. Preq., approval of instructor. Individually supervised and systematically organized observation and participation in evaluative and educational procedures with exceptional students. (G)

480: Introduction to Orientation and Mobility. 0-3-3. Provides an examination and application of the fundamental principles and theories of orientation & mobility. Students will progress through a graduated travel curriculum. (G)

502: Psychosocial and Educational Appraisal of Exceptional Students. 7-1-3. Preq., approval of instructor. Administration and interpretation of specialized individual tests, infant development scales, non-verbal tests for linguistically impaired, verbal tests for sensory handicaps, and accelerated academic assessment.

504: Human Exceptionalities Seminar. 0-3-3. An overview of special education emphasizing social, physical, emotional, and educational components of exceptional students including history and current legislation.

511: Advanced Educational Psychology. 0-3-3. An in-depth study of the major theories of learning with an emphasis on reviewing contemporary research relating to human learning and the application of psychological principles to instructional technology.
### ELECTRICAL ENGINEERING TECHNOLOGY (ELET)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Introduction to Electrical Engineering Technology, 3-0-1</td>
<td>A survey of topics to introduce the student to the profession, the department and the curricula.</td>
</tr>
<tr>
<td>160</td>
<td>Basic Electricity, 0-3-3</td>
<td>An introduction to the fundamental concepts of electricity.</td>
</tr>
<tr>
<td>161</td>
<td>Basic Electricity Lab, 3-0-1</td>
<td>Coreq., ELET 160. Practical laboratory exercises to illustrate the material in ELET 160.</td>
</tr>
<tr>
<td>170</td>
<td>Basic Circuit Theory, 0-3-3</td>
<td>Preq., Concurrent registration in ELET 171 and MATH 111. Introduction to DC circuit theory; loop equations, node equations and major network theorems. Single time constant transients.</td>
</tr>
<tr>
<td>171</td>
<td>Basic Circuit Lab, 3-0-1</td>
<td>Concurrent registration in ELET 170. Laboratory companion to ELET 170.</td>
</tr>
<tr>
<td>180</td>
<td>AC Circuits, 0-3-3</td>
<td>Preq., ELET 170, Coreq., MATH 112. Concurrent registration in ELET 181. An extension of the concepts developed in ELET 170, to include alternating current circuits for sinusoidal steady-state analysis.</td>
</tr>
<tr>
<td>181</td>
<td>AC Circuits Laboratory, 3-0-1</td>
<td>Concurrent registration in ELET 180. Laboratory companion to ELET 180.</td>
</tr>
<tr>
<td>196</td>
<td>AC &amp; DC Analysis, 0-2-2</td>
<td>Preq., MATH 111, 112, and some experience with AC and DC Circuits. Mathematical principles with underlie circuit analysis. Mesh and nodal analysis, network theorems, Kirchhoff's laws, Thevenin's and Norton's equivalents for both AC and DC circuits.</td>
</tr>
<tr>
<td>197</td>
<td>Electronic Analysis, 0-3-3</td>
<td>Preq., ELET 180, and some experience with electronic circuits transistors and operational amplifiers. Mathematical principles which underlie electronic analysis. Amplifiers and feedback circuits.</td>
</tr>
<tr>
<td>198</td>
<td>Instrumentation, 0-2-2</td>
<td>Preq., ELET 180 or 196, and some experience with instrumentation circuits. Mathematical principles which instrumentation.</td>
</tr>
<tr>
<td>260</td>
<td>Electronics, 0-3-3</td>
<td>Preq., ELET 180. Concurrent registration in ELET 261. An introductory treatment of solid state devices, concentrating on the ordinary diode and the bipolar and field effect transistors.</td>
</tr>
<tr>
<td>261</td>
<td>Electronics Laboratory, 3-0-1</td>
<td>Preq., Concurrent registration in ELET 260. Introductory electronics laboratory, a companion to ELET 260.</td>
</tr>
<tr>
<td>270</td>
<td>Instrumentation, 0-3-3</td>
<td>Preq., ELET 180 or consent of the instructor. Basic measuring devices, meters, bridges, etc. An introduction to the methods used in making accurate measurements.</td>
</tr>
<tr>
<td>271</td>
<td>Instrumentation Laboratory, 3-0-1</td>
<td>Preq., Concurrent registration in ELET 270. Laboratory for the study of electrical and electronic controlled instrumentation.</td>
</tr>
<tr>
<td>273</td>
<td>Electronics Applications Laboratory, 3-0-1</td>
<td>Concurrent registration in ELET 272. Training in the construction and troubleshooting of solid state electronics circuits.</td>
</tr>
<tr>
<td>274</td>
<td>Computer Programming, 0-1-1</td>
<td>The logic of computer solutions to problems. Basic programming utilizing a higher level programming language. Applications of computer usage in Electrical Engineering Technology. Also listed as ELEN 243.</td>
</tr>
<tr>
<td>280</td>
<td>Electrical Power, 0-3-3</td>
<td>Preq., ELET 180. A survey of the power field; the aims, problems and techniques. Future trends.</td>
</tr>
<tr>
<td>285</td>
<td>Computers Laboratory, 3-0-1</td>
<td>Preq., Concurrent registration in ELET 284. Practical laboratory exercises in computer circuitry and maintenance techniques.</td>
</tr>
<tr>
<td>360</td>
<td>Electrical Power, 0-3-3</td>
<td>Preq., ELET 180 and 270. Concurrent registration in ELET 361. Study of techniques and solution to fundamental problems in the electric power industry. Emphasis on practical applications.</td>
</tr>
<tr>
<td>361</td>
<td>Electrical Power Laboratory, 3-0-1</td>
<td>Concurrent registration in ELET 360. Companion laboratory to 360.</td>
</tr>
<tr>
<td>370</td>
<td>Integrated Circuits, 0-3-3</td>
<td>Preq., ELET 260. Concurrent registration in ELET 371. Applications of integrated circuits, both linear and discrete, in a variety of amplifiers, switching circuits and functional operations.</td>
</tr>
<tr>
<td>371</td>
<td>Integrated Circuits Laboratory, 3-0-1</td>
<td>Concurrent registration in ELET 370. Practical laboratory work in the utilization of integrated circuits in active networks, both linear and discrete.</td>
</tr>
<tr>
<td>383</td>
<td>Computer Servicing Laboratory, 3-0-1</td>
<td>Coreq., ELET 382. Practical troubleshooting of computer systems.</td>
</tr>
<tr>
<td>390</td>
<td>Electrical Drafting, 0-3-3</td>
<td>A course in mechanical drafting with emphasis on schematic diagrams, wiring diagrams, circuit boards, and electrical standards and codes.</td>
</tr>
<tr>
<td>460</td>
<td>Communication Circuits, 0-3-3</td>
<td>Preq., ELET 260. Concurrent registration in ELET 461. The study of circuits used in AM and FM radio, television, and digital data transmission.</td>
</tr>
<tr>
<td>461</td>
<td>Communication Circuits Laboratory, 3-0-1</td>
<td>Concurrent registration in ELET 460. Companion laboratory to lecture ELET 460. Construction of RF amplifiers, modulators, etc.</td>
</tr>
<tr>
<td>465</td>
<td>Circuit Design and Fabrication, 3-1-2</td>
<td>Preq., ELET 370 and ELET 390. A student project course in design, layout and fabrication of printed circuits.</td>
</tr>
<tr>
<td>468</td>
<td>Electronic Motor Control, 0-3-3</td>
<td>Preq., ELET 260, 360. Concurrent registration in ELET 469. Application of solid-state devices to the control of power in static and dynamic energy conversion systems. Methods of control in DC and AC systems.</td>
</tr>
<tr>
<td>469</td>
<td>Electronic Motor Control Laboratory, 3-0-1</td>
<td>Preq., Concurrent registration in ELET 468. Companion laboratory to ELET 468.</td>
</tr>
<tr>
<td>470</td>
<td>Control Systems, 0-3-3</td>
<td>Preq., ELET 260. Concurrent registration in ELET 471. Introductory control systems. A survey of the field, with emphasis on the problems, current solutions, and analytical methods.</td>
</tr>
<tr>
<td>471</td>
<td>Control Systems Laboratory, 3-0-1</td>
<td>Concurrent registration in ELET 470. Field trips and laboratory experiments in principles of automatic control systems.</td>
</tr>
</tbody>
</table>


241: Introduction to Microcomputers. 0-3-3. Introduction to computer organization and operation, data representation and manipulation, assembly language programming, register level operations, peripheral device interfaces. 


243: Computer Programming. 0-1-1. The logic of computer solutions to problems. Basic programming utilizing a higher level programming language. Applications of computer usage in Electrical Engineering. Also listed as ELET 274.


402: Electrical Design. 3 hours credit. Preq., written consent of supervising instructor. Closely supervised design of electrical engineering problem. Opportunity for individual investigation, design, and fabrication of electrical apparatus. 

403: Electrical Design. 1 hour credit. Preq., Written consent of supervising instructor. Closely supervised design of electrical engineering problem. Opportunity for individual investigation, design, and construction of electrical apparatus or system. 

404: Electrical Design. 2 hours credit. Preq., written consent of supervising instructor. Closely supervised design of electrical engineering problem. Opportunity for individual investigation, design, and construction of an electrical apparatus or system. 

406: Electrical Engineering Design I. 3-1-2. Preq., ELEN 331, 339, 389 and senior standing. Design problems requiring the integration of circuits, electronics, field theory, controls, energy conversion, power systems, and communication theory. 


408: Electrical Engineering Design III. 3-0-1. Preq., ELEN 407. A laboratory for the continuing development and implementation of the senior design project started in ELEN 406 and continued in ELEN 407. 


422: Introduction to Discrete Time Systems. 0-3-3. Preq., ELEN 321 or permission of instructor. Discrete signals, LTI systems, discrete Fourier analysis, discrete filters, sampling, Z-transforms. (G) 

435: Electronics. 0-3-3. Preq., ELEN 335. Feedback amplifiers, integrated circuit analysis, operational amplifier applications in the areas of nonlinear circuits, active filters, switching circuits, controls, and communications. (G) 

437: Microfabrication Principles. 0-3-3. Preq., MATH 244, and PHYS 202. Fundamentals of microfabrication processes necessary for the realization of ULSI and other technologies. (G) 

438: Microelectronic Applications & Device Fabrication. 3-2-3. Microfabrication processes integration and applications to the realization of ULSI and other technologies. (G) 

441: Computer Systems Interfacing. 3-2-3. Preq., consent of instructor. Topics useful in integrating multi-component systems of manufacturing with computer-based monitoring, control and communication. (G) 

450: Selected Topics. 0-2-2. Preq., permission of instructor. Work in an area of recent progress in electrical engineering of immediate interest or need. Topic selected will vary from term to term. 

451: Special Topics. 0-3-3. Preq., consent of instructor. Study in an area of recent progress in electrical engineering of immediate interest or need. Topic selected will vary from term to term. (G) 

461: Communication Systems. 0-3-3. Preq., ELEN 321 and 335. Evaluation and design of communication systems utilizing Fourier and random signal analysis. Amplitude, frequency, pulse, pulse-code modulation and demodulation. Multiplexing. (G) 

462: Digital Communication Systems. 0-3-3. Preq., ELEN 461 or consent of instructor. Analysis and design of digital communication systems. Signals and spectra. Digital baseband and carrier systems, digital networks, introduction to emerging technologies. (G) 


469: Communications Laboratory. 3-0-1. Coreq., ELEN 461. Communications laboratory to accompany ELEN 461. Fourier Spectrum, AM systems, FM systems, and Time Division Multiplex. 


479: Automatic Control Systems Laboratory. 3-0-1. Credit or registration in ELEN 471. Laboratory design, simulation and testing of automatic control systems. (G) 

481: Power Systems. 0-3-3. Preq., ELEN 381 or consent of instructor. Per-unit notation. The design and analysis of balanced power systems including load flow, economic dispatch, short circuit and over current device coordination and control of watts and vars. (G) 

482: Power Systems Design and Analysis. 0-3-3. Preq., ELEN 481 or consent of instructor. Review of three-phase short circuits. Symmetrical
components. Analysis of power systems in the transient state. Control of frequency and power flow in interconnected systems. (G)

483: Motor Control. 0-3-3. Preq., ELEN 481. Speed control. Reduced voltage starting techniques. Classical relay ladder logic. Modern programmable logic control device applications. Power electronic applications. (G)

489: Electrical Energy Conversion Laboratory. 3-0-1. Preq., ELEN 381; Coreq., registration in ELEN 481. Laboratory design and testing of basic electromechanical devices and machines.

491: Machine Vision. 3-2-3. Preq., Senior or Graduate status and permission of instructor. Machine Vision systems applied to Manufacturing. Content includes lighting, optics, vision hardware and software. (G)


513: Antennas and Radiation. 0-3-3. Preq., ELEN 512 or permission of instructor. Channel effects and types of propagation. Theory and practice in antenna design.

533: Optoelectronics. 0-3-3. Preq., Permission of instructor. Modulation of light, display devices, lasers, photodetectors, optical transistors, logic gates, Waveguides, transmitter and receiver design.

535: Advanced Topics in Microelectronics. 0-3-3 (6). Preq., consent of instructor. May be repeated with change in subject matter. Selected topics of current research interest in the field of microelectronics.

537: Advanced Microfabrication with Computer-Aided Design. 0-3-3. Preq., ELEN 438 or consent of instructor. Advanced microfabrication production development and integration with the aid of computer process modeling and simulation.

538: Advanced Microelectronic Devices with Computer-Aided Design. 0-3-3. Preq., ELEN 537 or consent of instructor. Principles of operation and analysis of advanced microelectronic devices with the aid of computer device modeling and simulation.


545: Computer Architecture. 0-3-3. Preq., CME 460 or graduate standing. An introduction to current machine architectures. Topics include memory design, pipeline processing, vector machines, multiprocessor architectures and parallel algorithm design techniques and evaluation methods.

550: Special Problems. 1-4 semester hours. Advanced problems in electrical engineering. The problems and projects will be treated by current methods used in professional practice.

551: Research and Thesis in Electrical Engineering. Registration in any quarter may be for three semester hours credit of multiples thereof. Maximum credit allowed is six semester hours.

555: Practicum. 0-3-3 (6). Preq., 12 semester hours of graduate work. Analytical and/or experimental solution of an engineering problem; technical literature survey required; development of engineering research techniques.

557: Special Topics: Electrical Engineering. 0-3-3 (9). The topic or topics will be selected by the instructor from the various sub-areas of electrical engineering. May be repeated as topics change.

561: Random Signals and Systems. 0-3-3. Preq., ELEN 461 and 471 or permission of instructor. Random signal analysis. Correlation and power spectrum analysis. Stochastic communication and control systems.


581: Computer Applications to Power Systems. 0-3-3. Preq., ELEN 481 or permission of instructor. The study of algorithms for power network matrices, three-phase networks, fault, load flow and stability problems solution by computer methods.

582: Motor Control and Power Electronics. 0-3-3. Preq., ELEN 381 or permission of instructor. Electronic and electromagnetic motor control devices; programmable controllers; motor protection; solid state power device application to DC and AC power conversion.

583: Electric Power Distribution System Design. 0-3-3. Preq., ELEN 481 or permission of instructor. Design of utility distribution systems. Substation layout, switching devices, aerial and underground lines and cables, code requirements, development of standards.


588: Advanced Topics in Power Systems. 0-3-3. Preq., consent of instructor. May be repeated with change in subject matter. Selected topics of current research interest in the field of power systems engineering.

641: Advanced Topics in Computer Systems. 0-3-3. Preq., ELEN 543 or permission of instructor. Topics on the latest advancements in computer systems and computer design.

665: Multidimensional Signal Processing. 0-3-3. Preq., ELEN 565 or permission of instructor. Representations of signals which are functions of several variables. Multidimensional Z-Transforms and discrete Fourier Transforms. 2-D FIR and IIR filter design and implementation.


681: Advanced Topics in Power Systems. 0-3-3. Preq., ELEN 581 or permission of instructor. May be repeated with a change in subject matter. Selected topics of current research interest in the field of power systems engineering.

120: Engineering Problem Solving I. 3-1-2. Coreq., MATH 240, CHEM 100. The engineering profession, engineering problem solving, computer applications.

121: Engineering Problem Solving II. 3-1-2. Preq., ENGR 120; Coreq., MATH 241, CHEM 101. Introduction to engineering design, engineering problem solving, computer applications.

122: Engineering Problem Solving III. 3-1-2. Preq., ENGR 121; Coreq., MATH 242, CHEM 102. Engineering design, engineering problem solving, computer applications.

189: Special Topics. 1-4 hours credit. Selected topics in an identified area of study in the College of Engineering and Science. May be repeated for credit.

194: Special Topics. 1-4 hours credit. Selected topics in an identified area of study in the College of Engineering and Science. May be repeated for credit.


221: Electrical Engineering and Circuits I. 3-2-3. Preq., MATH 243, and credit or registration in MATH 244. Fundamental concepts, units and laws. Network theorems, network simplification, phasors and AC solution of circuits, power and electronic applications.


289: Special Topics. 1-4 hours credit. Selected topics in an identified area of study in the College of Engineering and Science. May be repeated for credit.

294: Special Topics. 1-4 hours credit. Selected topics in an identified area of study in the College of Engineering and Science. May be repeated for credit.

299: Cooperative Education Applications. 40-0-1 (7). Preq., Admission to the College of Engineering and Science Cooperative Education Program.

300: European Influence on Engineering. 7-1-3. Preq., Sophomore standing or consent of instructor. European influence on Engineering theory and

389: Special Topics. 1-4 hours credit. Selected topics in an identified area of study in the College of Engineering and Science. May be repeated for credit.

394: Special Topics. 1-4 hours credit. Selected topics in an identified area of study in the College of Engineering and Science. May be repeated for credit.


431: Contracts and Specifications. 0-2-2. Prereq., junior standing or consent of instructor. Legal documents of construction contracts.

489: Special Topics. 1-4 hours credit. Selected topics in an identified area of study in the College of Engineering and Science. May be repeated for credit.

494: Special Topics. 1-4 hours credit. Selected topics in an identified area of study in the College of Engineering and Science. May be repeated for credit.

530: Engineering Experimentation and Research. 4-2-3. Prereq., Working knowledge of statistics. The purpose of this course is to prepare graduate students to conduct experimental research. This interdisciplinary course introduces students to the topics needed in order to design experiments and measurement systems successfully.

566: Quality in Engineering. 0-3-3. Prereq., STAT 400. Principles of quality as applied to engineering processes. Applications to the engineering workplace and industrial/academic research will be emphasized.

589: Special Topics. 1-4 hours credit. Prereq., graduate standing. Selected topics in an identified area of study in the College of Engineering and Science.

590: Application of Artificial Intelligence Techniques. 3-2-3. Prereq., Permission of instructor. Introduction to artificial intelligence agents and technologies and their applications in industrial, mechanical, and manufacturing engineering systems.


594: Special Topics. 1-4 hours credit. Prereq., graduate standing. Selected topics in an identified area of study in the College of Engineering and Science.

622: The Academic Enterprise. 0-1-1. Topics include college teaching, proposal preparation and research, scholarly activities, service, record keeping, and maintaining balance between professional and personal life.

631: Global Competitiveness and Management of Technology. 0-3-3. Prereq., Consent of instructor. Principles of technology development and management in a global context, and their applications in the planning and implementation of new technological capabilities.

641: Formulation of Solutions to Engineering Problems. 0-3-3. Prereq., Consent of instructor. Approaches used to formulate solutions to physical engineering problems, mathematical representation of physical laws, boundary value problems, variational methods, common mathematical approaches to solutions, approximate solutions, validity of solutions.

651: Research and Dissertation. Doctoral students only. Registration in any quarter may be for three semester hours credit or multiples thereof, up to a maximum of nine semester hours credit per quarter. Maximum total credit allowed is thirty hours.

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**ENGLISH AS A SECOND LANGUAGE (ESL)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>103</td>
<td>ESL Grammar Laboratory</td>
<td>3-0-1 (3)</td>
<td>Sentence pattern exercises for non-native speakers.</td>
<td></td>
</tr>
<tr>
<td>104</td>
<td>ESL Pronunciation Laboratory</td>
<td>3-0-1 (3)</td>
<td>Pronunciation and vocabulary exercises for non-native speakers.</td>
<td></td>
</tr>
<tr>
<td>111</td>
<td>Level I English Grammar</td>
<td>0-3-3</td>
<td>High beginning grammar in context for non-native speakers.</td>
<td></td>
</tr>
<tr>
<td>112</td>
<td>Level I Writing</td>
<td>0-3-3</td>
<td>Basic sentence patterns and paragraph structure for non-native speakers.</td>
<td></td>
</tr>
<tr>
<td>113</td>
<td>Level I Vocabulary/Conversation</td>
<td>0-3-3</td>
<td>Pronunciation, word study, and contextual practice for non-native speakers.</td>
<td></td>
</tr>
<tr>
<td>114</td>
<td>Level I Reading</td>
<td>0-3-3</td>
<td>For non-native speakers at the 1,000-word vocabulary level.</td>
<td></td>
</tr>
<tr>
<td>121</td>
<td>Level II English Grammar</td>
<td>0-3-3</td>
<td>Low intermediate grammar in context for non-native speakers of English.</td>
<td></td>
</tr>
</tbody>
</table>

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**ENGLISH (ENGL)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>099</td>
<td>Preparation for College English</td>
<td>0-3-3</td>
<td>Required if English ACT score is less than 17, or Verbal SAT score is less than 430. Grammar, punctuation, spelling, and vocabulary, with the development of writing skills. Special emphasis on the sentence and paragraph.</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>Freshman Composition I</td>
<td>1-3-4</td>
<td>Prereq., English ACT score between 17 and 18 inclusive, or Verbal SAT score between 430 and 450 inclusive, or English O99. Standard course for first-year college students; the three stages of writing (prewriting, writing, and rewriting); writing essays in various modes; grammar review. Includes 1 hour weekly tutorial lab. Credit will not be given for both ENGL 100 and ENGL 101.</td>
<td></td>
</tr>
<tr>
<td>101</td>
<td>Freshman Composition I</td>
<td>0-3-3</td>
<td>Prereq., English ACT score is greater than or equal to 19, or Verbal SAT score is greater than or equal to 460. Standard course for first-year college students; the three stages of writing (prewriting, writing, and rewriting); writing essays in various modes; grammar review. Credit will not be given for both ENGL 100 and ENGL 101.</td>
<td></td>
</tr>
<tr>
<td>102</td>
<td>Freshman Composition II</td>
<td>0-3-3</td>
<td>Prereq., ENGL 101. Continues work of Composition I; includes preparation of a research paper from library sources.</td>
<td></td>
</tr>
<tr>
<td>103</td>
<td>Foundations of Ancient Civilization</td>
<td>0-3-3</td>
<td>Interdisciplinary study of major works of ancient Greek and Roman civilization. For HONORS Program students only. Satisfies course work in ENGL 101, or 102. Also listed as HIST 103.</td>
<td></td>
</tr>
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200: Poetry Appreciation. 0-3-3. Preq., ENGL 102. Introduction to poetry designed for students seeking to fulfill General Education requirements under Humanities.

201-202: Sophomore English-Introduction to British and American Literature. 0-3-3 each. Preq., ENGL 101 and 102.

ENGL 201 is a prerequisite for advanced courses in British literature; ENGL 202 is a prerequisite for advanced courses in American literature.

203: Foundations of Modern Civilization. 0-3-3. Interdisciplinary study of major works of modern civilization. For HONORS Program students only. Satisfies course work in ENGL 102, or 201. Also listed as HIST 203.

204: Foundations of American Civilization. 0-3-3. Interdisciplinary study of major works of American civilization. For HONORS Program students only. Satisfies course work in ENGL 102, or 202. Also listed as HIST 204.

303: Technical Writing. 0-3-3. Preq., ENGL 102. Development of technical writing skills and styles; various technical writing assignments, including a technical report.

308: The Short Story. 0-3-3. Preq., ENGL 201 or 202. Study of the form and development of the short story.

325: Contemporary English and American Poetry. 0-3-3.


336: Advanced Composition. 0-3-3 (6). Preq., ENGL 102. Writing longer essays in various rhetorical modes, with attention to appropriate writing styles.

384: Introduction to Creative Writing. 0-3-3. Preq., ENGL 201 or 202. Introduction to traditional and contemporary forms of short fiction and poetry through study of selected models. Students required to write in both genres.

400: Theories of Composition. 0-3-3. A course designed to familiarize prospective English teachers with theories of teaching composition. (G)

401: The American Mind. 0-3-3. Important currents of ideas that have found expression in American literature. (G)

403: Chaucer. 0-3-3. (G)

404: Milton. 0-3-3. (G)

406: World Masterpieces. 0-3-3. Survey of major non-English literary texts in the Western Tradition. (G)

407: Principles and Techniques of Literary Criticism. 0-3-3. (G)


409: American Fiction of the Nineteenth Century. 0-3-3. Study of the rise of American fiction through Henry James. (G)

410: The Eighteenth-Century British Novel. 0-3-3. Study of the rise of the British novel from its inception to the end of the 18th century. (G)


412: The Twentieth-Century British Novel. 0-3-3. Preq., ENGL 201. Study of the development of the British novel from the Edwardian Period to the present. (G)

413: The Romantic Period. 0-3-3. Study of the major writers of the age. (G)

414: The Victorian Period. 0-3-3. Study of the major writers of the age. (G)

415: Shakespeare. 0-3-3. The major plays and the poens. (Same as SPHT 415.) (G)

416: American Literature: Beginnings to 1865. 0-3-3. Study of American writing from the Colonial period through the Civil War. (G)

417: American Literature: 1865 to Present. 0-3-3. Study of American writing from Reconstruction to the contemporary period. (G)

418: The American Renaissance. 0-3-3. Preq., ENGL 202. Study of the major authors and cultural contexts of the American Renaissance, 1830-1860. (G)

419: Contemporary Drama. 0-3-3. American, English, and European. (G)

420: The Continental Novel. 0-3-3. (G)

421: History and Philosophy of Rhetoric. 0-3-3. Survey of the development of rhetoric from Ancient Greece and Rome to current theories and practice. (G)

422: The English Language. 0-3-3. Primarily a course in the history of the language. (G)

423: English Words and Idioms. 0-3-3. Rhetoric and logic as applied to critical thinking. Semantics. Exercises in propaganda analysis and identification of cultural code. (G)

424: Southern Literature. 0-3-3. Study of the works of writers who have interpreted the American South, with emphasis on the authors of the Southern Renaissance. (G)

425: Russian Literature in English Translation. 0-3-3 (6). Representative works of Russian literature from the 19th and 20th centuries; repeatable for credit with different course content. May not be counted towards a minor in Russian. Also listed as RUSS 425. (G)

426: Spanish Literature in English Translation. 0-3-3 (6). Representative works of Spanish literature from the Middle Ages to the 20th century; repeatable for credit with different course content. May not be counted towards a major or minor in Spanish. Also listed as SPAN 426. (G)

427: Latin American Literature in English Translation. 0-3-3 (6). Representative works of 20th-century Latin American literature; repeatable for credit with different course content. May not be counted towards a major or minor in Spanish. Also listed as SPAN 427. (G)

428: French Literature in English Translation. 0-3-3 (6). Representative works of French literature from the Middle Ages to the 20th century; repeatable for credit with different course content. May not be counted towards a major or minor in French. Also listed as FREN 428. (G)

429: American Fiction of the Twentieth Century. 0-3-3. Study of the “American Century” as reflected in representative novels and short stories. (G)

430: African American Literature. 0-3-3. Study of the development of African American writing, with emphasis on the period from the Harlem Renaissance to the present. (G)

438: Sixteenth Century English Literature (excluding Shakespeare). 0-3-3. (G)

439: Seventeenth Century English Literature (excluding Milton). 0-3-3. (G)

440: Eighteenth Century English Literature. 0-3-3. (G)

452: The Literature of the Bible. 0-3-3. A survey of literary genres of the Old and New Testaments, focusing on the poetic and/or narrative art of each. (G)

555: Modern British Literature. 0-3-3. Preq., ENGL 201 or 202. Study of the poetry, plays, and fiction from the early 20th century to World War II. (G)

561: Contemporary British Literature. 0-3-3. Preq., ENGL 201 or 202. Study of the poetry, plays, and fiction from World War II to the present. (G)

459: Technical Writing and the Scientific Method. 0-3-3. Preq., ENGL 303. Study of scientific thought, methodologies, and rhetorical strategies; application to style and structure in technical discourse. (G)

460: Advanced Technical Writing. 0-3-3. Preq., ENGL 303. Emphasis on longer reports and specialized forms of technical writing, such as manuals. (G)

461: Technical Writing for Publication. 0-3-3. Preq., ENGL 303. Writing articles for scientific and technical journals, with emphasis on audience analysis and appropriate style. (G)

462: Technical Editing. 0-3-3. Preq., ENGL 303. The work of an editor, including editing a text, planning projects, and working with authors, illustrators, and production workers. (G)

463: Scientific and Technical Presentations. 0-3-3. Preq., ENGL 303. Presenting technical information to specialized and non-technical audiences; emphasis on organization, support, and clarity of presentation; effective use of visual materials. (G)

464: Occupational Technical Writing. 0-3-3. Preq., ENGL 303. Preparing the technical writer to plan and conduct training sessions within the organization and to supervise others engaged in writing tasks. (G)

465: Specification, Bid, Grant, and Proposal Writing. 0-3-3. Preq., ENGL 303. Writing specifications, bids, grants, and proposals; emphasis on audience analysis, organization, and writing style. (G)

466: Technical Writing Internship. 9-0-3. (6). Preq., permission of Department Head. On-the-job experience for the technical writing student; intended to give supervised practice under realistic working conditions. Internships are to be arranged individually. (G)

467: Special Problems in Technical Communication. 3 hours credit. (6). Preq., Permission of Department Head. The selection, study and writing of special problems. Students will work on individual projects under direct supervision. (G)
468: Readings in Scientific and Technical Communications, 0-3-3. Preq., ENGL 303. Study of the current material written about technical communication, with a reading and critical analysis of various technological journals. (G)

469: Graduate in Technical writing, 0-3-3. Preq., ENGL 303. Theory and practice of illustrating texts, with emphasis on electronic media to integrate nonverbal and written materials.

470: Linguistics, 0-3-3. Preq., ENGL 201 or 202. Systematic study of language acquisition, change, and variation; application to teaching grammar, writing, and/or literature. Also listed as FLNG 470. (G)

475: Special Topics, 0-3-3 (6). Seminar with topic to be designated by the instructor. (G)

480: Science Fiction, 0-3-3. Study of science fiction within the context of modern literature, including short stories, novels, and films. (G)

482: Folklore Studies, 0-3-3. Study of folklore theory and genres in culture and literature with topics ranging from verbal arts to ritual and belief. (G)

484: Advanced Creative Writing, 0-3-3. Preq., ENGL 384 or instructor's permission. Workshop format includes intensive criticism of student writing in short fiction and/or poetry with emphasis on submission for publication. (G)

491: Advanced Expository Writing, 0-3-3. Writing essays and reports for professional publication; focus on style, format, and editing manuscripts. (G)

500: Teaching College Composition, 0-3-3. Preparation for teaching Developmental English and Freshman English; includes theory, research, methodology, and pedagogy related to college composition.

515: Shakespeare Seminar, 0-3-3 (6). Preq., ENGL 415 or its equivalent. Study of Shakespeare texts and background writings of the Elizabethan and Jacobean Periods; repeatable once for credit with different instructor and/or course content.

520: Seminar in Composition, 0-3-3 (6). Selected reading and research topics in composition studies; repeatable for credit with different instructor and/or course content.

560: Seminar in Technical Writing, 0-3-3 (6). Preq., ENGL 303 or equivalent. Selected reading and research topics in technical writing theory and practice; repeatable once for credit with different instructor and/or course content.

575: Special Topics, 0-3-3 (6). Graduate seminar with topic to be designated by instructor.

583: Seminar in British Literature, 0-3-3 (6). Reading and research topics in British Literature; repeatable once for credit with different instructor and/or course content.

584: Seminar in American Literature, 0-3-3 (6). Reading and research topics in American Literature; repeatable once for credit with different instructor and/or course content.

585: English Teachers' Workshop, 0-3-3. A course designed primarily for school teachers of English.

591: Literary Research and Bibliography, 0-3-3. Focuses upon methodology of scholarship, stressing various kinds of literary problems and approaches to their solutions; emphasis on descriptive and analytical bibliography.

ENVIRONMENTAL SCIENCE (ENSC)

200: Introduction to Environmental Sciences, 0-3-3. Basic laws, principles and issues related to the causes, effect and controls of environmental problems, Man-environment interaction.

275: Aquatic Bioassays, 0-1-1. Internet-based course centering on governmental regulations concerning bioassays to test for toxicity in waste effluents released into natural waters in the United States. Also listed as BISC 275.

300: Agricultural Pollution, 0-3-3. Study of various agricultural practices as they relate to the causes and solutions to environmental impact of agriculture on the air, water, and soil.

310: Soil Science, 0-3-3. Preq., CHEM 100, 101, 102. A general study of soil science, emphasizing the relation of soil properties and processes to plant growth. Also listed as PLSC 310.

311: Soil Science Laboratory, 3-0-1. Preq. or Coreq., ENSC 310. Laboratory exercises to elaborate fundamental principles of soil properties, soil testing, and soil survey reports. Also listed as PLSC 311.

313: Ecology, 4 1/4-2-3. Preq., BISC 132, 133. An overview of the interactions of plants, animals, and non-living factors as they influence individuals, populations, communities, and ecosystems.

400: Environmental Science Seminar, 0-1-1(3). Reviews, reports, and discussions of current problems relating to environmental science.

421: Epidemiology, 0-3-3. Methods of data collection and analysis to determine the frequency, distribution and cause of disease and/or injury in human and non-human populations.

422: Occupational Health and Safety, 0-3-3. The design and implementation of occupational health and safety services to including fitness-to-work evaluations, health monitoring, hazard evaluation and response to emergencies involving hazardous substances. (G)


446: Instrumentation, 3-2-3. Preq. 12 hours of BISC or CHEM. Emphasizes the operational theory, use, and maintenance of instruments appropriate to biological, diagnostic and laboratory exercises.

456: Environmental Chemistry, 0-3-3. Preq., one year of college chemistry and junior standing. Chemical principles that regulate and affect the environment. (G)

458: Environmental Law, 0-3-3. Preq., BISC 130, 131, or approval of instructor. A review and analysis of state and federal laws, conventions, and international treaties that influence natural resource management. (G)

477: Cooperative Education Work Experience, 1-6 hours credit (9). (Pass/Fail). On site, supervised, structured work experiences located within a 100 mile radius of Ruston. Application and supervision fee required.

478: Cooperative Education Work Experience, 1-6 hours credit (9). (Pass/Fail). On site, supervised, structured work experiences located beyond a 201 mile radius of Ruston. Application and supervision fee required.

479: Cooperative Education Work Experience, 1-6 hours credit (9). (Pass/Fail). On site, supervised, structured work experiences located beyond a 201 mile radius of Ruston. Application and supervision fee required.

FAMILY & CHILD STUDIES (FCS)

100: Marriage and Family Relations, 0-3-3. Significant factors for successful marriage, marital adjustment, and family relations.

101: Skills for Marriage, 0-3-3. Designed to provide students with information and skills necessary to facilitate an enduring and satisfying marriage.


201: Introduction to Child and Family Development, 0-3-3. Basic principles and sequences in human development from prenatal period through aging years. Emphasis on developmental tasks, forces influencing development, and the family life cycle.

210: Family Interpersonal Relationships, 0-3-3. The study of interaction between individuals with application to family dynamics, personal relationships, professional interaction, and job competency.


276: Children's Near Environments, 0-3-3. An examination of articles related to the near environment of children including child nutrition, food preparation and activities, housing, equipment, and clothing needs.

277: Guiding Infants and Young Children, 0-2-2. Principles and techniques of positive guidance emphasizing a problem solving philosophy and a child-centered approach.

280: Hospitalized Children and Youth, 0-3-3. Study of issues involved in childhood illnesses and hospitalization.

291: Orientation to Child Life Programs, 0-3-3. A study tour of child life programs and services.

301: Early Childhood Development, 3-2-3. Preq., FCS 201. The development of young children. Theory and practice are correlated through readings, class discussions, and nursery school laboratory experiences.

311: Literacy Development in Early Childhood Education, 0-3-3. Preq. or Coreq., Admission to Teacher Education Upper Division or consent of instructor. Development of early language skills. Emphasis on the preschool language arts curriculum as preparation for language development.

320: Family Theory, 0-3-3. Preq., FCS 100, 201 or consent of instructor. An overview of theoretical frameworks in family science with primary emphasis given to application of constructs.

321: Methods in Early Childhood Education, 3-2-3. Preq., Admission to Teacher Education Upper Division and FCS 301 or consent of instructor.