systems, natural language understanding, intelligent tutoring systems, learning and neural networks.

579: Data Mining for Bioinformatics. 0-3-3. Preq., CSC 325 equivalent or consent of instructor. Topics include: Introduction to Data Mining (DM), data warehousing, OLAP for DM, data preprocessing, DM primitives, languages and system architecture, mining association rules in large DBMS, Introduction to Computational Bioinformatics (BI), DM for multi-dimensional BI data, image mining and CBIR.

580: Advanced Data Mining for Bioinformatics. 0-3-3. Preq., CSC 579 or equivalent or consent of instructor. Topics include: data mining (dm) concept description, classification, clustering, predictive analysis, anomaly detection in data marts, computational analysis of DNAs, DNA sequence analysis using DM techniques, pair-wise alignment techniques, multiple alignment techniques, secondary database searching using multi-dimensional indexing, future trends in DM.

581: Parallel Algorithms. 0-3-3. Preq., CSC 240. Models of parallel computers, basic communications operations, algorithms for searching, sorting, graph structures, and systolic systems, dynamic programming, performance and scalability of parallel systems.

582: Parallel Computational Methods. 0-3-3. Preq., CSC 240, MATH 415. Parallel implementations of FFT, interpolation, integration, Eigensystems, matrix maximization, ODEs, PDEs.

583: Computational Solutions for PDE I. 0-3-3. Preq., MATH 414. Finite difference schemes and their accuracy, stability, and convergence. Schemes for parabolic and hyperbolic PDEs. Emphasis on program implementation.

584: Computational Solutions for PDE II. 0-3-3. Preq., CSC 583 or MATH 574. Finite difference schemes for elliptic PDEs, iterative methods, and introduction to finite element methods and multigrid methods. Emphasis on program implementation.

COUNSELING (COUN)

400: Introduction to Counseling. 0-3-3. Introductory course for professional workers. Includes purposes and scope of counseling service, concepts, principles and basic techniques of counseling. **(G)**

401: Student Personnel Services. 0-3-3. A study of student personnel programs in colleges and universities. This course may not be taken for graduate credit.

460: Behavioral Counseling. 0-3-3. A non-cognitive approach to counseling that presents the necessary attitudes, concepts, principles, and skills for individual counseling.

500: Principles and Administration of Guidance Services. 0-3-3. An overview of the current principles and practices involved in various types of guidance and counseling services.

505: Analysis of the Individual. 3-2-3. Preq., PSYC 542 or equivalent. This course offers students an orientation to psychological testing procedures, their interpretation, evaluations and use in the understanding of clients.

506: Introduction to Rehabilitation Counseling. 0-3-3. Philosophical, social, psychological and legislative bases of rehabilitation; nature and scope of the process and functions of rehabilitation counselors.

507: Case Management in Rehabilitation Counseling. 0-3-3. Development of case management in procedures and skills: integration of theory and practice.

508: Introduction to Counseling Theories. 0-3-3. A detailed study of a selection of the best known schools of counseling theory.

510: Counseling the Elderly. 0-3-3. Dynamic and therapeutic models for counseling the aged and their families; focus on matching interventions to lifestyles.

512: Counseling the College Student. 0-3-3. An emphasis on development in young adulthood; historical, philosophical, and practical aspects of personnel services for college students.

513: Career Information and Career/Life Style Development. 0-3-3. Provides an understanding of career development; occupational/educational information sources and systems; career and lifestyle counseling; career decision-making and instruments relevant to career planning.

514: Career Education: Vocational Guidance. 0-3-3. A course in career guidance designed to provide an overview of career development and its applications within the high school setting.

515: Career Education: Orientation of the World of Work. 0-3-3. A course in career guidance designed to provide an overview of career development and its applications within the elementary school setting.

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.

518: Techniques of Counseling. 3-2-3. Preq., COUN 508. Provides an overview of counseling techniques and interview methods.

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.

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). Statewide Transfer Agreement Course*.

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). Statewide Transfer Agreement Course*.

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. Statewide Transfer Agreement Course*.

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. 3 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)**

*This course will be accepted for general education transfer credit. A course MAY or MAY NOT be accepted as equivalent to or substitute for a course in a specific discipline or major. Please check the Board of Regents Web site at http://www.regents.state.la.us/ and the school you are transferring to for additional information.

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. Microeconomics; 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. Preq., QA 390. 7Analysis 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.

540: Macroeconomics: 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 macroeconomic variables.

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. 1-3 hours credit. 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.

650: Directed Study in Economics. 1-3 hours credit. Hours and credits to be arranged. Consent of instructor and approval of department head required. Special problem or specific area of economics.

685: Comprehensive Exam in Economics. No credit. Doctoral standing required. Required for all business administration doctoral students seeking to take the comprehensive exam in economics. Successful completion is a prerequisite to the oral comprehensive exam for those seeking a primary field or examined minor in economics. Requires consent of graduate director.

EDUCATION (EDUC)

430: Internship in Teaching. 35-0-3 (9). Preq., 12 hours of 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.

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.

504: Problems in Teaching Mathematics in the Elementary School. 0-3-3. A study of the needs and problems of teachers of mathematics in the elementary school. An introduction to modern arithmetic with emphasis on newer teaching methods.

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.

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)

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.

EDUCATIONAL COMPUTER TECHNOLOGY (ECT)

440: Technology for Teachers I. 0-3-3. This course is designed to introduce teachers to computer applications that support classroom instruction. Classroom management techniques and modeling effective teaching strategies will also be a part of the instructional process. **(G)**

441: Technology for Teachers II. 0-3-3. This course is designed to enhance teachers' classroom instruction through technology integration. Classroom management techniques and modeling effective teaching strategies will also be a part of the instructional process. **(G)**

442: Curriculum Enhancement Through Technology. 0-3-3. This course is designed to enhance the instructional program within the K-12 classroom. Emphasis will be placed on how technology can be easily integrated into standards-based lessons. **(G)**

445: Introduction to Technology for Teachers. 4-1-3. This course is for preservice and inservice teachers who want to develop proficiency in using technology to support classroom learning. **(G)**

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500: Technology Leadership to Support Standards-Based Teaching & Learning. 4-1-3. Preq., ECT 445 or equivalent. Exploration of ways to use technology to support standards-based teaching and learning in the classroom.

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

502: Design & Development of Multimedia Instructional Units. 4-1-3. Preq., ECT 500 and 501. Design and development of multimedia products to facilitate student learning.

510: 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.

EDUCATION 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 EDUC 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.

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

400: Human Exceptionalities. 3-2-3. This course provides a survey (e.g. definitions, characteristics, identification, legislation, and education procedures) of students with exceptionalities (e.g., GT, MR, LD, EBD, VI, HI, PD). **(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. **(G)**

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. 10-2-3. Preq., Upper Division. A course designed to acquaint the student with the best practices in teaching business subjects. **(G)**

410: Business and Office Procedures. 10-2-3. Preq., Upper Division. 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)

421: Materials and Methods for Early Childhood/Elementary GradesMathematics. 0-3-3. Preq., PSYC 204 or EPSY 511. An exploration of content, methodologies, and assessments in the P-3 mathematics program.

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 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)**

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 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.

434: Diverse Learners. 2-1-3. Preq., Upper Division. This course provides P-12 teaching candidates with the awareness, knowledge, skill, and

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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)**

440: Behavior Management of Students with Mild/Moderate Disabilities. 3-2-3. This course is an advanced study of the biological, social, psychological, and behavioral factors associated with behavioral disorders. **(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 procedure. **(G)**

445: Keyboarding and Computer Applications in the Classroom. 10-2-3. Preq., Upper Division. A course designed to develop keyboarding skills, techniques, and computer applications for classroom instruction. **(G)**

447: Software Applications for Classroom Instruction. 10-2-3. Preq., EDCI 445 and Upper Division. A course designed to apply keyboarding skills, techniques, and technology integration to support classroom instruction. **(G)**

448: Instructional Software Design and Development. 10-2-3. Preq., EDCI 447 and Upper Division. A methods course designed for teaching multimedia and web-based instructional design and development. **(G)**

449: 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)**

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)**

452: Administration of Instructional Materials Centers. 0-3-3. Techniques organization, management and selection of printed and non-book materials in multi-media instructional materials centers.

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.

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)**

481: Inclusion Models and Procedures. 6-1-3. A field-based exploration of inclusion models, pupil appraisal, and curriculum designs. **(G)**

482: Strategies and Procedures for Serving Young Children with Special Needs. 0-3-3. Preq., EDCI 400 or EDCI 504. Planning, procedures, strategies/assessments for young children with special needs and their families. **(G)**

483: Psycho-educational Assessment of Exceptional Students. 10-2-3. An examination of administration and interpretation of basic tests (standardized and criterion-referenced) to make appropriate assessment decisions regarding exceptional students. **(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)**

*This course will be accepted for general education transfer credit. A course MAY or MAY NOT be accepted as equivalent to or substitute for a course in a specific discipline or major. Please check the Board of Regents Web site at http://www.regents.state.la.us/ and the school you are transferring to for additional information.

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.

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)**

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: Psychoeducational Assessment of Exceptional Students. 2-1-3. Assessment and interpretation procedures for administering and interpreting tests (standardized and criterion-referenced), and making appropriate assessment decisions regarding students with M/M disabilities.

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.

504: Human Exceptionalities: Seminar. 1-2-3. Provides a survey (including legislation, definitions, characteristics, identification, and educational procedures) of student with various exceptionalities.

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: Practicum for Graduate Students. 4-0-3 (9). (Pass/Fail). Structured laboratory experiences in area(s) of specialization in education. May be repeated for credit up to 9 hours.

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 teacher-education 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 survey of planning and accountability models in education while emphasizing the essential principles and skills necessary for designing, implementing, and evaluating education plans.

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.

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

540: Behavior Management of Students with Mild/Moderate Disabilities. 1-2-3. This course is an advanced study of the biological, social, and psychological factors in behavior disorders.

541: Research Seminar in Methodology & Teaching. 1-2-3. Designed to provide students opportunities to examine educational research on methodology and teaching, design a research study, and complete and present a research paper.

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 application.

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

561: Research Design and Analysis. 0-3-3. Preq., EDUC 542. A study of the techniques involved in the analysis of selected experimental designs in educational research.

562: 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.

563: Secondary School Curriculum. 0-3-3. A study of the principles of curriculum development in the secondary school.

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

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

567: 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).

568: Teaching Methods for Effective Instruction of Reading. 0-3-3. An in-depth study of reading programs and materials, diagnosis and instruction for individual needs, research findings, and their applications to methods of instruction.

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: Field Problem and Internship. 0-3-3. Preq., approval of the Dept. Head, Computer Information Systems and Analysis. The provision of supervised professional activities in business education directed by the business education faculty. Selection of one major area of business education for intensive study in terms of methods, materials, research, and curricular problems.

571: 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.

572: 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.

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

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

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

577: Teaching Methods for Effective Instruction of Science and Social Studies. 2-1-3. A course for the study of curriculum organization, instructional strategies and material, and research findings related to PK-8 science and social studies.

578. Braille II. 1-1-2. Braille II introduces Nemeth (math), music, and computer Braille codes while increasing students' speed and accuracy in reading, Brailling, transcribing, and proofreading Braille materials.

579. Developmental Aspects of Blindness. 1-3-3. This course emphasizes knowledge of physical, social, and emotional development of blind children including acquisition of motor, language, and cognitive skills, birth through adulthood.

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

583: Normal and Impaired Visual Functioning. 1-3-3. Teaches basic eye anatomy, functional vision assessments, common eye diseases and their implications and intervention strategies for blind children and adults.

584: Orientation and Mobility for Teachers of Blind Students. 2-1-3. Teaches basics of efficient, independent, non-visual travel; movement for young blind children; multi-handicapped blind children and contemporary philosophical issues.

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

591: National Board for Professional Teaching Standards Trends and Issues I. 0-3-3. Experiences and reflections about teaching and learning presented to help participants begin the portfolio preparation process for National Board Certification. Techniques about videoing the classroom will be provided along with information to assist teachers as they prepare for the assessment exam required for certification.

592: National Board for Professional Teaching Standards Trends and Issues II. 0-3-3. (Pass/Fail). Preq., EDCI 591. This course is designed to assist all teachers (PK-12) with preparation for certification as a National Board Certified Teacher.

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

EDUCATION LEADERSHIP (EDLE)

520: Practicum in Administration and Supervision. 40-0-3. (PASS/FAIL). Structured field-based experiences in educational administration and supervision.

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.

550: Supervision of Child Welfare & Attendance. 0-3-3. Preq., Graduate status. Principles and practices of census, child welfare, and attendance for the supervisor of child welfare and attendance or visiting teacher.

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.

553: The Educational Leader and Technology Supervision. 0-3-3. Preq., ECT 445 or equivalent skills. This course is designed to enable aspiring education administrators to plan, manage, lead, and sustain effective technology implementation in schools.

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 Principalship. 0-3-3. Duties and responsibilities in organization, leadership, administration and supervision in the elementary school.

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

559: School Finance. 0-3-3. An in-depth survey into the financial and business management in public education.

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.

593: Leading with Technology for Administrators. 0-3-3. This course is designed to support school administrators in understanding and utilizing technology to impact overall instructional leadership and school improvement.

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.

512: Consulting Strategies for Assessment Teachers. 0-3-3. Preq., SPED 490. Development of teacher and parent consultation skills, coordination and interaction of the education assessment teacher with classroom programs, and available community resources.

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515: Gifted/Talented Individuals. 0-3-3. The nature and needs of exceptionally able students with emphasis on curriculum adjustment and research in the field.

516: Gifted/Talented Psychoeducational Materials and Methods. 0-3-3. Preq., consent of area coordinator. Process of materials utilization and development for teacher of gifted/talented students, including procedures for implementing creativity, problem solving activities, and higher levels of cognition.

550: Field Work in Human Exceptionalities. 12-0-3 (6). Internship in the application of principles of learning and child development from a behavioral approach to the educational needs of exceptional students.

561: Diagnostic/Prescriptive Psychoeducational Strategies and Materials for Exceptional Students. 0-3-3. Individualized interfacing of learning characteristics of exceptional students with curriculum requirements and environmental structure; emphasis on individualized prescriptive strategies and programs.

581: Blindness Rehabilitation Systems and Issues. 0-3-3. Presents an overview of rehabilitation history, concepts, programs and services; professional responsibilities and ethics with field experience utilizing techniques for working with rehabilitation agencies, school systems, organizations and public or private programs serving blind and visually impaired individuals.

583: Advanced Orientation & Mobility. 0-3-3. Provides instruction for teaching techniques of independent mobility to individuals who are blind/visually impaired. Curriculum includes strategies and techniques for rural environments, special travel situations, and use of public transportation and applications to daily living vocational environments. Special techniques used by O&M instructors who are blind/visually impaired are emphasized.

584: Internship in Orientation & Mobility. 0-3-3 (6). Preq., enrollment in Educational Psychology (Visual Impairments - Orientation & Mobility) program and EPSY 583. Intensive experience in teaching Orientation and Mobility skills to visually impaired students. Field experience at the Louisiana Center for the Blind, Ruston, LA. (Pass/Fail)

599: Master's Thesis. 0-3-3. (6 hours minimum). Original research conducted under the supervision of a departmental faculty member in the student's program area. Student must be enrolled whenever university facilities or faculty are used. (Pass/Fail).

ELECTRICAL ENGINEERING TECHNOLOGY (ELET)

100: Introduction to Electrical Engineering Technology. 3-0-1. A survey of topics to introduce the student to the profession, the department and the curricula.

170: Basic Circuit Theory. 0-3-3. Preq., Math 101 and concurrent registration in ELET 171. Introduction to DC circuit theory; loop equations, node equations and major network theorems. Single time constant transients.

171: Basic Circuit Lab. 3-0-1. Concurrent registration in ELET 170. Laboratory companion to ELET 170.

180: AC Circuits. 0-3-3. 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.

181: AC Circuits Laboratory. 3-0-1. Concurrent registration in ELET 180. Laboratory companion to ELET 180.

196: AC & DC Analysis. 0-2-2. Preq., MATH 101, 112, and some experience with AC and DC Circuits. Mathematical principles with underlie circuit analysis. Mesh and nodal analysis, network theorems, Kirchoff's laws, Thevenin's and Norton's equivalents for both AC and DC circuits.

197: Electronic Analysis. 0-3-3. Preq., ELET 180, and some experience with electronic circuits transistors and operational amplifiers. Mathematical principles which underlie electronic analysis. Amplifiers and feedback circuits.

198: Instrumentation. 0-2-2. Preq., ELET 180 or 196, and some experience with instrumentation circuits. Mathematical principles which instrumentation.

260: Electronics. 0-3-3. 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.

261: Electronics Laboratory. 3-0-1. Preq., Concurrent registration in ELET 260. Introductory electronics laboratory, a companion to ELET 260.

270: Instrumentation. 0-3-3. Preq., ELET 180. Basic measuring devices, meters, bridges, etc. An introduction to the methods used in making accurate measurements.

271: Instrumentation Laboratory. 3-0-1. Preq., Concurrent registration in ELET 270. Laboratory for the study of electrical and electronic controlled instrumentation.

272: Electronics Applications. 0-3-3. Preq., ELET 260. Concurrent registration in ELET 273. Continuation of ELET 260. The study of semiconductor devices imbedded in passive RLC networks, and their applications in practical situations.

273: Electronics Applications Laboratory. 3-0-1. Concurrent registration in ELET 272. Training in the construction and troubleshooting of solid state electronics circuits.

274: 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 Technology. Also listed as ELEN 243.

275: Computer Programming. 0-1-1. Preq., ELET 274. A continuation of ELET 274. Applications of computer usage in Electrical Engineering Technology.

280: Electrical Power. 0-3-3. Preq., ELET 180. A survey of the power field; the aims, problems and techniques. Future trends.

284: Computers. 0-3-3. Preq., ELET 260. Concurrent registration in ELET 285. Digital and analog computer systems, circuits, and maintenance.

285: Computers Laboratory. 3-0-1. Preq., Concurrent registration in ELET 284. Practical laboratory exercises in computer circuitry and maintenance techniques.

360: Electrical Power. 0-3-3. 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.

361: Electrical Power Laboratory. 3-0-1. Concurrent registration in ELET 360. Companion laboratory to 360.

370: Integrated Circuits. 0-3-3. 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.

371: Integrated Circuits Laboratory. 3-0-1. Concurrent registration in ELET 370. Practical laboratory work in the utilization of integrated circuits in active networks, both linear and discrete.

390: Electrical Drafting. 0-3-3. A course in mechanical drafting with emphasis on schematic diagrams, wiring diagrams, circuit boards, and electrical standards and codes.

460: Communication Circuits. 0-3-3 Preq., ELEN 232 or ELET 370. The study of systems used in communicating data. LANs and WANs.

461: Communication Circuits Laboratory. 3-0-1. Companion laboratory to lecture ELET 460. Installation and administration of a LAN..

465: Circuit Design and Fabrication. 3-1-2. Preq., ELET 370 and ELET 390. A student project course in design, layout and fabrication of printed circuits.

468: Electronic Motor Control. 0-3-3. 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.

469: Electronic Motor Control Laboratory. 3-0-1. Preq., Concurrent registration in ELET 468. Companion laboratory to ELET 468.

470: Control Systems. 0-3-3. 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.

471: Control Systems Laboratory. 3-0-1. Concurrent registration in ELET 470. Field trips and laboratory experiments in principles of automatic control systems.

472: Seminar. 0-1-1. Preq., senior standing. Discussion of employment, current job market, preparation of personal data sheets, application forms, other placement activities.

490: Special Problems. 1-4-(9) hours credit. Preq., consent of instructor. A course to be arranged for the purpose of covering a selected topic of current importance or special interest.

ELECTRICAL ENGINEERING (ELEN)

223: Electrical Circuits II. 3-2-3. Preq., ELEN 221 and credit or registration in MATH 242. Transient analysis of source-free and high order systems, complex frequency, and resonance phenomena. Computer solution of circuits. Electrical instruments, devices, and design for measurements in electrical networks.

232: Introduction to Digital Design. 0-2-2. Introduction to digital design techniques, Boolean algebra, combinational logic, minimization

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techniques, simple arithmetic circuits, programmable logic, sequential circuit design, registers and counters.

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.

242: Introduction to Microprocessors. 3-2-3. Preq., ELEN 232. Introduction to microprocessor organization and operation, data manipulation, assembly language programming, register level operations, and device interfacing.

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.

311: Introduction to Electric & Magnetic Fields. 0-2-2. Preq., PHYS 202. Vector analysis. Energy and potential. Static magnetic fields. Magnetic circuits and inductance.

321: Linear Systems. 0-3-3. Preq., ELEN 222 and credit or registration in MATH 245. Fourier Series. Fourier Transform. Laplace Transform. Convolution and the system function. Filters. State variable representation and solution.

334: Solid State Electronics. 0-3-3. Preq., MATH 244, and PHYS 202. Fundamentals of solid state electronic materials and devices, emphasizing semiconductors and principles of operation of ULSI devices.

335: Analog Electronics. 3-2-3. Preq., ENGR 221. Diode and transistor characteristics and models. Design of power supplies, single- and multiple-stage amplifiers. Design and application of operational amplifiers.

381: Electrical Machinery. 0-3-3. Preq., ELEN 311. Electromagnetic energy storage and conversion. Principles of electromechanical energy conversion. Power transformers. Design of electromechanical devices. Analysis of rotating machines.

386: Electrical Equipment for Buildings. 0-3-3. Preq., MATH 220 and PHYS 210. Not available for electrical engineering majors. A study of the problems of the design and application of electrical wiring and lighting systems for building.

402: Electrical Design. 3 hours credit. Preq., consent of 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., consent of 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., consent of 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 economics.

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

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.

411: Electric and Magnetic Fields. 0-3-3. Preq., ELEN 311, and MATH 244. Capacitance. LaPlace's Equation. Maxwell's equations. Time-varying electromagnetic fields. Plane waves. Transmission lines. Design of impedance-matching devices. **(G)**

412: Signal Transmission. 0-3-3. Preq., ELEN 411. Transmission lines and distributed parameters. Wave-guides, traveling electromagnetic wave analysis, and boundary valve problems. Impedance matching, graphical solutions, and microwave networks. Laboratory applications and design. **(G)**

422: Introduction to Discrete Time Systems. 0-3-3. Preq., ELEN 321. 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 process 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. Analysis and design of digital communication systems. Signals and spectra. Digital base band and carrier systems,. digital networks, introduction to emerging technologies. **(G)**

463: Optical Communication Systems. 0-3-3. Preq., ELEN 411. Optical waveguides, mode theory and ray optics. Transmission losses and signal distortion. Optical sources, detectors and transmission link analysis.

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.

471: Automatic Control Systems. 0-3-3. Preq., ELEN 321, MATH 244. Analysis and design of linear feedback systems. Mathematical modeling. Transfer functions and signal-flow graphs. State variable analysis. Time domain analysis and design of linear control systems. Frequency domain analysis and design of linear control systems. **(G)**

472: Introduction to Digital Control. 0-3-3. Preq., ELEN 321, 471. An introduction to the theory of linear discrete control systems. Time-domain analysis of discrete systems. Z-transform. Sampling. Discrete-time signal analysis. Sampled data control systems. **(G)**

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. 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. 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)**

512: Electromagnetic Waves. 0-3-3. Preq., ELEN 411. Propagation, reflection and refraction of electromagnetic waves. Guided waves and power flow. Boundary-value problems.

513: Antennas and Radiation. 0-3-3. Preq., ELEN 512. 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. Advanced microfabrication process development and integration with the aid of computer process modeling and simulation.

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

543: Microcomputer Design. 0-3-3. Preq., ELEN 331 and 442. Study of microcomputer design. Microcomputer Development System and Logic Analyzer. Design of control processors.

545: Computer Architecture. 0-3-3. 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. (Pass/Fail)

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. Random signal analysis. Correlation and power spectrum analysis. Stochastic communication and control systems.

565: Digital Signal Processing. 0-3-3. Preq., ELEN 461. Review of discrete linear signals and systems theory. Design/Implementation of FIR and IIR digital filters. Quantization and finite word length effects. Spectrum estimation.

566: Estimation Theory. 0-3-3. Preq., ELEN 561. Estimation, based on noise-corrupted observations, of unknown system states. Maximum-likelihood and least square estimation; matched filters. Wiener and Kalman filtering.

572: Digital Control Systems I. 0-3-3. Preq., ELEN 471. Sampling Theory. Date reconstruction. Z-transforms. Stability analysis. Time-domain analysis. Frequency domain analysis. Introduction to Digital Control Systems.

573: Digital Control Systems II. 0-3-3. Preq., ELEN 572. Review of Z-transforms. State variable techniques. Controllability and observability. Design of digital control systems with state variable techniques. Digital state observer. Microprocessor control.

581: Computer Applications to Power Systems. 0-3-3. Preq., ELEN 481. 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. 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. Design of utility distribution systems. Substation layout, switching devices, aerial and underground lines and cables, code requirements, development of standards.

584: Electromechanical Energy Conversion. 0-3-3. Preq., ELEN 381. Equations of motion of electromechanical systems. Analytical techniques for solution of equation. Typical transducers. The generalized machine system dynamics.

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. Topics on the latest advancements in computer systems and computer design.

665: Multidimensional Signal Processing. 0-3-3. Preq., ELEN 565. 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.

672: Optimal Control Systems. 0-3-3. Preq., ELEN 571. Linear system theory. Statistics of random variables. Response to distributed inputs. System analysis and optimum design with multiple inputs and outputs. Optimum inputs.

673: Nonlinear Control Systems. 0-3-3. Preq., ELEN 571. Mathematical models of nonlinear systems. Phase-space analysis. Critical point characterization. Describing functional Sub-harmonic generation. Stability determination. General solution methods.

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

ENGINEERING (ENGR)

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. 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.

220: Statics & Mechanics of Materials. 3-2-3. Preq., ENGR 122, PHYS 201, MATH 242. Resultants and equilibrium of force systems, stress and strain, truss and frame analysis, torsion, bending, deflections of beams, combined loading.

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.

222: Thermodynamics. 3-2-3. Preq., ENGR 122, MATH 242. Fundamental concepts, properties of pure substance, work, heat, first and second laws of thermodynamics, entropy, cycle analysis.

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 practice. Engineering accomplishments in Europe. Impact of engineering on western civilization.

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.

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. Preq., 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. Preq., STAT 405. 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. Preq., 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. Preq., Permission of instructor. Introduction to artificial intelligence agents and technologies and their applications in industrial, mechanical, and manufacturing engineering systems.

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592: Engineering Computational Methods. 0-3-3. Preq., Consent of instructor. Solution of linear and nonlinear systems of equations, roundoff errors, stability, convergence, interpolation and extrapolation, finite difference, approximation of functions, DFT/FFT radix 2, random numbers.

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

622: The Academic Enterprise. 0-1-1 (2). Topics include college teaching, proposal preparation and research, scholarly activities, service, record keeping, and maintaining balance between professional and personal life. May be repeated for credit.

631: Global Competitiveness and Management of Technology. 0-3-3. Preq., 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. Preq., 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.

ENGLISH AS A SECOND LANGUAGE (ESL)

103: ESL Grammar Laboratory. 3-0-1 (3). Sentence pattern exercises for non-native speakers.

104: ESL Pronunciation Laboratory. 3-0-1 (3). Pronunciation and vocabulary exercises for non-native speakers.

111: Level I English Grammar. 0-3-3. High beginning grammar in context for non-native speakers.

112: Level I Writing. 0-3-3. Basic sentence patterns and paragraph structure for non-native speakers.

113: Level I Vocabulary/Conversation. 0-3-3. Pronunciation, word study, and contextual practice for non-native speakers.

114: Level I Reading. 0-3-3. For non-native speakers at the 1,000-word vocabulary level.

121: Level II English Grammar. 0-3-3. Low intermediate grammar in context for non-native speakers of English.

122: Level II Writing. 0-3-3. A continuation of beginning writing skills for non-native speakers. Emphasis on paragraph organization and structure.

123: Level II Vocabulary/Conversation. 0-3-3. Word study through contextual readings and teacher/test guided conversational practice for non-native speakers.

124: Level II Reading. 0-3-3. For non-native speakers at the 1,500-word vocabulary level.

203: ESL Listening Comprehension Laboratory. 3-0-1 (3). Exercises in listening comprehension skills for non-native speakers.

204: ESL Conversation Laboratory. 3-0-1 (3). Exercises for developing conversation skills for non-native speakers.

231: Level III English Grammar. 0-3-3. High intermediate grammar in context for non-native speakers.

232: Level III Writing. 0-3-3. High intermediate writing skills for non-native speakers. Emphasis on paragraphs and short compositions.

233: Level III Vocabulary/Conversation. 0-3-3. Listening comprehension, auditory cues, vocabulary study and conversational exercises for non-native speakers.

234: Level III Reading. 0-3-3. Reading skills for non-native speakers at the 3,000-word vocabulary level and above.

241: Level IV English Grammar. 0-3-3. Advanced grammar in context for non-native speakers.

242: Level IV Writing. 0-3-3. Advanced composition skills for non-native speakers. Emphasis on essay writing and elementary research techniques.

243: Level IV Vocabulary/Conversation. 0-3-3. Advanced word study to assist non-native speakers in isolating and contextualizing problems within a specific written passage.

244: Level IV Reading. 0-3-3. Reading skills for non-native speakers at the university level.

305: Level V Communication Skills. 0-3-3 (9). Advanced listening, speaking, and body language techniques for non-native speakers studying in the university or assisting or teaching in the American classroom.

454: English Grammar in ESL Teaching. 0-3-3. Preq., Senior standing. Analysis of English grammar specifically for developing instructional techniques used in teaching grammar for communicative competence in ESL. Also listed as EDUC 454. **(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 EDUC 460. **(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 EDUC 470. **(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 EDUC 493. **(G)**

ENGLISH (ENGL)

099: Preparation for College English. 0-3-3. 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. (Pass/Fail)

100: Freshman Composition I. 1-3-4. Preq., English ACT score between 17 and 18 inclusive, or Verbal SAT score between 430 and 450 inclusive, or English 099. 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.

101: Freshman Composition I. 0-3-3. Preq., 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. Statewide Transfer Agreement Course*.

102: Freshman Composition II. 0-3-3. Preq., ENGL 101. Continues work of Composition I; includes preparation of a research paper from library sources. Statewide Transfer Agreement Course*.

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. Statewide Transfer Agreement Course*.

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

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.

332: Advanced Grammar. 0-3-3. Preq. ENGL 102. Study of descriptive grammar with some prescriptive grammar and introduction to transformational grammar.

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)**

408: American Poetry. 0-3-3. Preq., ENGL 202. Study of major poets from the Puritans to the contemporary period. **(G)**

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

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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)**

411: The Nineteenth-Century British Novel. 0-3-3. Preq., ENGL 201. Study of the development of the British novel from Austen to the end of the nineteenth 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 poems. (Same as SPTH 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 fallacies. **(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)**

455: 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)**

456: 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: Graphics 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. **(G)**

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, technology, 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

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and approaches to their solutions; emphasis on descriptive and analytical bibliography.

ENTREPRENEURSHIP (ENTR)

410: Entrepreneurship for High Tech Start-Ups. 0-3-3. Preq., junior standing. Overview of the major business elements and the management of high technology enterprises.

430: Innovative Product Design. 6-1-3. Preq., junior standing and consent of instructor. An interdisciplinary, team-oriented, problem-solving approach to innovative product design and prototype development, including analysis of marketing and commercialization strategies.

460: Innovative Venture Research. 6-1-3. Preq., consent of instructor. Implementation of strategic business principles and cross-disciplinary research to evaluate new business ventures through commercialization of university-based intellectual property.

489: Special Topics. 1-4 hours credit. Selected topics in the interdisciplinary area of entrepreneurship. May be repeated for credit.

560: Innovative Venture Research. 6-2-3. Preq., consent of instructor. Implementation of strategic business principles and cross-disciplinary research to evaluate the commercial potential of research programs and commercialization strategies for university-based intellectual property.

ENVIRONMENTAL SCIENCE (ENSC)

211: Introduction to Environmental Sciences. 0-3-3. Basic laws, principles, and issues related to causes, effects, and controls of environmental problems including human-environment interactions. Credit will not be given for ENSC 211 if credit is given for BISC 211.

212: Conservation and Management of Natural Resources. 0-3-3. Introduction to the management of renewable resources including the use, conservation, and sustainability of these resoureces. Credit will not be given for ENSC 212 if credit is given for BISC 212.

246: Instrumentation. 4-2-3. Preq., 8 semester hours of biological or chemical sciences. Emphasizes laboratory safety and the operational theory, use, and maintenance of instruments appropriate to biological, environmental, and medical investigations. Credit will not be given for ENSC 246 if credit is given for BISC 246.

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. Credit will not be given for ENSC 275 if credit is given for BISC 275.

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. Cannot be taken for credit if student has credit for 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. Cannot be taken for credit if student has credit for 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. Credit will not be given for ENSC 313 if credit is given for BISC 313.

400: Environmental Science Seminar. 0-1-1(3). Reviews, reports, and discussions of current problems relating to environmental science. Credit will not be given for ENSC 400 if credit is given for BISC 480.

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)**

444: Environmental Microbiology. 4-2-3. Preq., BISC 260. Basic and contemporary aspects of soil, water, and industrial microbiology. Credit will not be given for ENSC 444 if credit is given for BISC 444.

450: Management of Soil & Water Quality. 3-2-3. Preq., ENSC 310 or PLSC 310. Study of agricultural practices and other activities that affect soil and water quality with an emphasis on solutions that avoid or minimize adverse environmental impacts. Cannot be taken for credit if student has credit for PLSC 450.

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., Junior standing or consent of instructor. A review and analysis of state and federal laws, conventions, and international treaties that influence natural resource management. Credit will not be given for ENSC 458 if credit is given for BISC 458. **(G)**

477: Cooperative Education Work Experience. 1-9 hours credit. May be repeated for credit. On site, supervised, structured work experiences located within a 100 mile radius of Ruston. Application and supervision fee required. Cannot be taken for credit if student has credit for AGSC 477.

478: Cooperative Education Work Experience. 1-9 hours credit. May be repeated for credit. On site, supervised, structured work experiences located within a 101-200 mile radius of Ruston. Application and supervision fee required. Cannot be taken for credit if student has credit for AGSC 478.

479: Cooperative Education Work Experience. 1-9 hours credit. May be repeated for credit. On site, supervised, structured work experiences located beyond a 201 mile radius of Ruston. Application and supervision fee required. Cannot be taken for credit if student has credit for AGSC 479.

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.

200: Parenting. 0-3-3. Study of the parenting role. Emphasis on parent-child interaction as it influences child growth and development.

201: Introduction to Life Span 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.

221: Parent and Community Involvement. 0-3-3. Introduces students to theories, research, and techniques of family and community involvement for teachers working with children birth to age 8 years and their families.

276: Children's Near Environments. 0-3-3. An examination of issues 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 preschool 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.

312: Methods of Early Childhood Math. 3-2-3. Emphasizes the developmental mathematical skills of the young child ages 3 to 6 years. Foundation, characteristics and methods of mathematical development will be coverd.

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. Important factors in planning for preschool children. Emphasis on objectives, planning nursery school experiences, and evaluation.

331: Infant Development. 3-2-3 Preq., FCS 201 or consent of instructor. Survey of influences on prenatal and infant development. Theory and practice correlated through readings, class discussion and laboratory experiences.

341: Issues and Applications in Middle Childhood and Early Adolescence. 3-2-3. Preq., FCS 201 or consent of instructor. A survey of

*This course will be accepted for general education transfer credit. A course MAY or MAY NOT be accepted as equivalent to or substitute for a course in a specific discipline or major. Please check the Board of Regents Web site at http://www.regents.state.la.us/ and the school you are transferring to for additional information.