

5850. International Trade. 3 hours. Examines the nature and theoretical foundations of modern trade between nations. Topics to be covered include patterns of international trade and production, welfare implications of trade, impacts of tariffs and quotas, balance of trade and balance of payments issues. Analysis of trade implications of international monetary systems, multinational corporations, exchange rates and economic implications of political action. Individual readings and research required. Prerequisite(s): ECON 1100-1110 or consent of department. Students may not receive credit for both ECON 4850 and 5850. Usually offered fall and spring terms/semesters and 5W1 (summer session).

5880. Seminar on Current Health Care Economics Research. 3 hours. Topics include health care reform; problems associated with health insurance markets; alternative health care financing systems in the United States and other countries; health care regulation by the states; universal health care coverage; and the “public goods” nature of health care. Topics are subject to change depending on the current trends in the field and relevancy to students’ interests. The course includes presentations and discussion of the student’s research papers. Prerequisite(s): ECON 4180 or 5180.

5900-5910. Special Problems. 1–3 hours each. Open to advanced students capable of doing independent research under the direction of the instructor. To be registered for only on recommendation of the department chair.

5920-5930. Research Problems in Lieu of Thesis. 3 hours each. Required of Master of Science candidates majoring in economic research or labor and industrial relations who choose not to take the exit exam (Option 1). A problem in lieu of thesis with an emphasis on empirical studies will be written and submitted. Prerequisite(s): consent of department.

5950. Master’s Thesis. 3 or 6 hours. To be scheduled only with consent of department. 6 hours credit required. No credit assigned until thesis has been completed and filed with the graduate dean. Continuous enrollment required once work on thesis has begun. May be repeated for credit. Required for Master of Arts and Master of Science in economics.

5960-5970. Economics Institute. 1–6 hours each. For students accepted by the university as participants in special institute courses. May be repeated for credit, but not to exceed a total of 6 hours.

Educational Administration and Supervision

see Teacher Education and Administration

Educational Curriculum and Instruction

see Teacher Education and Administration

Educational Foundations

see *Undergraduate Catalog*

Educational Psychology

Applied Technology, Training and Development, ATTD

5010. Performance Assessment. 3 hours. A focus on the preliminary assessment of human performance problems in organizations. The design, development, implementation and evaluation of training programs for supervisors and trainers is discussed.

5100. Principles of Applied Technology, Training and Development. 3 hours. This overview course investigates the design, delivery and evaluation of training programs. The relationship of modern technology and training theories with organizational practices will also be addressed.

5110. Curriculum Design and Instructional Resources. 3 hours. Development, organization and use of curriculum materials and resources in career and technical education, with an emphasis on employability skills, work-based learning and instructional technology.

5120. Demonstrating Effective Presentation Skills. 3 hours. Such instructional strategies as lecture and demonstration are emphasized; includes introduction, questioning and summary techniques, as well as the use of basic media commonly utilized in technical presentations.

5121. Corporate Training Presentation Skills. 3 hours. Such training strategies as job coaching and small group instruction are emphasized; includes motivation techniques, one-on-one interaction skills, questioning and summary techniques and the use of electronic presentation media.

5130. Roles and Responsibilities of Career and Technical Education Professionals. 3 hours. Focuses on the career and technical education teacher’s role in the classroom, laboratory, school and community. Emphasizes the roles of technology, discipline and liability.

5140. Developing Work-Based Experiences in Career and Technical Education. 3 hours. This course is designed to address all aspects of work-based learning. Basic standards and the development of educational training opportunities are included.

5160. Advanced Computer Applications in Education and Training. 3 hours. Advanced preparation for students entering into education or training organizations that utilize modern computer-based technologies including graphic applications, telecommunications, networking, programming and instructional technology. Prerequisite(s): consent of department.

5200. Leadership Practices in Health Science Technology Education. 3 hours. Internet-based course consisting of seven modules designed to assist the health science technology education (HSTE) professional in organizing, facilitating and evaluating a successful leadership program for health science technology students. Requires participation in an e-group to share ideas and experiences.

5210. Authentic Assessment Techniques in Health Science Technology Education. 3 hours. Internet-based course consisting of three modules that examine a wide variety of assessment techniques and strategies for use in health science technology programs. Emphasis is placed on the practical application of assessment.

5400. Planning and Organizing Programs of Vocational Guidance. 3 hours. Purposes and functions of a guidance program, group guidance procedures, components of a vocational guidance program and techniques for providing vocational guidance services for elementary, secondary and adult populations.

5430. Historical Foundations of Applied Technology. 3 hours. An examination of the historical and philosophical foundations of applied technology. Interrelationships of economic, sociological and psychological foundations are considered. Includes the role and responsibility of the professional educator in applied technology programs.

5440. Facilitation Strategies in Applied Technology and Training. 3 hours. Advanced instructional strategies, such as group facilitation, cooperative learning, questioning, discussion, problem-solving, simulation, reflective teaching and other instructional techniques. Participants are expected to employ various presentation techniques through small group exercises. Prerequisite(s): ATTD 5120.

5470. Interpersonal Skills Development. 3 hours. Development of human relations and communication skills; human relations as a factor in developing programs in business, education and industry.

5480. Research Techniques in Applied Technology and Training. 3 hours. A general orientation to basic methods of research in applied technology, training and development; including the scientific method as a basis for analysis, interpretation of results. This course should be taken in the last 15 semester hours of the program.

5490. Diversity Issues in Applied Technology, Training and Development. 3 hours. This course will address general diversity issues that affect applied technology, training and development. Effective strategies and model programs will be discussed to enhance individual development in applied technology classrooms and training and development courses.

5500. Research Seminar in Applied Technology, Training and Development. 3 hours. The course focuses on research issues in applied technology, training and development. Problems related to the fields of applied technology, organizational culture, training and human resource development, research designs and statistical methods for conducting research in training and development will be studied.

5530. Curriculum Development in Applied Technology, Training and Development. 3 hours. Designed for applied technology and training professionals, this course focuses on curriculum theories, approaches to curriculum development and curriculum evaluation strategies. Includes development of goals, competencies, objectives, knowledge-based testing and performance-based testing.

5630. Principles of Marketing Education Program Administration. 3 hours. Demonstration of key marketing education program concepts. Concentration on application of procedures and strategies with an emphasis on planning, implementing, and managing an effective marketing education program. Students design a comprehensive marketing education program. It is recommended that this course be taken at end of the certification course series as a capstone class.

5720. Evaluation Seminar. 3 hours. A seminar designed to assist master's candidates in conducting research in the field of applied technology, training and development, including the dissemination and discussion of findings. Scheduled during last resident registration. Prerequisite(s): ATTD 5480.

5800. Studies in Education. 1–3 hours. Organized classes specifically designed to accommodate the needs of students and the demands of program development not met by the regular offerings. Short courses and workshops concerned with specific topics are organized on a limited-offering basis, to be repeated only upon demand. May be repeated for credit.

5900-5910. Special Problems. 1–3 hours each. Open to graduate students who are capable of developing a problem independently. Open only to resident students.

5950. Master's Thesis. 3 or 6 hours. To be scheduled only with consent of department. 6 hours credit required. No credit assigned until thesis has been completed and filed with the graduate dean. Continuous enrollment required once work on thesis has begun. May be repeated for credit.

6030. Practicum, Field Problem or Internship. 3 hours. Supervised professional activities in vocational education. Registration is on an individual basis. May be repeated for credit.

6100. Technological Innovations in Training and Development. 3 hours. Study of current technological trends in the field of training and development. Emphasis on technologies used in the design, development and support of training programs.

6200. Leadership Development in Applied Technology and Training. 3 hours. The function of the applied technology administrator and training facilitator as a professional leader in developing, planning, organizing, controlling, coordinating and evaluating programs, services and activities.

6210. Trends and Issues in Applied Technology, Training and Development. 3 hours. A study of current national trends and issues in the fields of applied technology, training and development. Emphasis on topics related to leadership, organizational culture and total quality improvement.

6450. Needs Analysis and Curriculum Development. 3 hours. Study of learning outcomes, including goals, general objectives and performance objectives. Emphasis on curriculum derivation utilizing a competency-based curriculum system.

6460. Consulting Skills. 3 hours. Overview of the role of the consultant in HRD. Skills of organizing a practice, marketing consulting services, performing consulting services and performing practice management procedures.

6470. Evaluation and Accountability in Applied Technology and Training. 3 hours. Methods and procedures used in evaluating applied technology and industrial training programs; services, activities and current practices used in determining and improving accountability.

6480. Research Seminar. 3 hours. An orientation to basic methods of doctoral dissertation research in applied technology, training and development; including the scientific methods as a basis for analysis and interpretation of results. Students begin preparation of a dissertation proposal in the field of applied technology, training and development. This course should be taken in the last 15–18 semester hours of the program.

6900-6910. Special Problems. 1–3 hours each. Research by doctoral students in fields of special interest. Includes project research studies and intensive reading programs. Conferences with professors in the fields also are included.

6950. Doctoral Dissertation. 3, 6 or 9 hours. To be scheduled only with consent of department. 12 hours credit required. No credit assigned until dissertation has been completed and filed with the graduate dean. Doctoral students must maintain continuous enrollment in this course subsequent to passing qualifying examination for admission to candidacy. May be repeated for credit.

Computer Education and Cognitive Systems, CECS

5010. Computer Education Tools. 3 hours. Application of computer software tools in education. Study of computer application packages and their utilization in the classroom.

5020. Computers in Education. 3 hours. Analysis of computer use in education and applications programming in education. Topics include software and hardware evaluation, planning computer education curricula and facilities. Prerequisite(s): CECS 5010 (may be taken concurrently).

5030. Introduction to Internet. 3 hours. Introduction to Internet technology. Using the Internet for research and professional productivity.

5100. Educational Computer Languages. 3 hours. An in-depth study of an Object-Oriented Programming Language. Requires "hands-on" programming independent of classroom instruction. Topics include variables, simple and complex data structures, object-oriented design, debugging, interface design plus creating and using objects. Educational implications of object-oriented programming. Prerequisite(s): CECS 5020 or consent of department.

5110. Multimedia in Technology Applications. 3 hours. Study and analysis of the use of the computer to deliver instruction. Topics include design, development and review techniques for CAI, current trends in CAI technology and lesson development with an authoring language. Prerequisite(s): CECS 5020.

5111. Introduction to Video Technology. 3 hours. Basic skills in the production of audio and video materials for multi-media and other digital presentation media. Study of both analog and digital production techniques, nature of audio and video signals, and how those signals are optimized in both the analog and digital domains. Other topics include camera techniques, shot composition, scene construction and visual continuity, audio techniques, script preparation, optimization of finished product and distribution mediums. Prerequisite(s): CECS 5010 or equivalent.

5120. Authoring Systems. 3 hours. Creation of comprehensive computer-based instructional systems that integrate presentation of materials with the monitoring of student performance and modification of the instructional system based on both internal and external factors. The class will focus on the use of current authoring system tools to develop representative systems.

5130. Educational Software Development. 3 hours. Application of software engineering principles to the development of educational software using high-quality human/computer interaction as the primary design criterion. Each student completes a major educational software development project during the course. Prerequisite(s): CECS 5100, 5110 or 5120, and 5210.

5200. New Technologies of Instruction. 3 hours. Selection, utilization and evaluation of media technology, and techniques used in the instructional programs of education and industry. Includes hands-on digital audio and visual processes.

5210. Instructional Systems Design. 3 hours. The design of instructional systems is examined through research reports on the theoretical assumptions of learning and analysis of learning systems as they apply to the development of educational and instructional training programs.

5260. Computer Graphics for Mediated Communications. 3 hours. Application of computer graphics to the preparation and presentation of mediated materials. Includes principles

of graphics communication, concepts in computer graphics, graphics input systems, graphics manipulation software and graphics output systems.

5300. Cognitive Processing. 3 hours. The study and analysis of models of cognitive systems including acquiring, manipulating, storing, interpreting and using information; special emphasis on the unique interactions between human information processing and computer-based processing as they apply to the instructional environment.

5310. Human-Computer Interaction. 3 hours. Study of the human as an information processor. Computer interface design that takes into consideration human capabilities and limitations. Educational implications of system input/output facilities. Impact upon instructional system design. Prerequisite(s): CECS 5210 or consent of department.

5400. Educational Telecommunications. 3 hours. Study and analysis of past and currently-emerging telecommunication technologies and their application to the field of education. Topics include history of telecommunication, digital and wireless communications, computer networks and distance education.

5420. Web Authoring. 3 hours. Course to aid education and training professionals in creating web-based materials and application utilizing Internet resources. Integration of text, graphics and multimedia elements in a web environment. Prerequisite(s): CECS 5260.

5440. Wireless Communications. 3 hours. Survey of wireless telecommunications systems and techniques including low-cost radio and satellite technologies potentially useful to educators. Prerequisite(s): CECS 5400.

5450. Building Internet Information Services. 3 hours. Design and implementation of Internet information services including FTP, conferencing and the World Wide Web. Students design and build various information services using software tools and hardware platforms representative of those used in education and training.

5460. Computer Networks for Educational Environments. 3 hours. Study of computer networks used in support of education and training. Includes topics in network topologies, wiring, administration, risk management and disaster recovery. Special emphasis is placed on the application of network technologies to K-12 educational environments, higher education and the training environments of business, industry and the military.

5500. Computer Applications for Curriculum and Instruction. 3 hours. Designed for both elementary and secondary teachers; skills and methods necessary to implement computer applications within the curriculum. Methods for managing the computer in the classroom; courseware implementation; utilization of word processing, databases, spreadsheets and telecommunications within the curriculum. Methods of teaching computer programming. Prerequisite(s): CECS 5020.

5510. Technology-Based Training Systems. 3 hours. An overview of the management and utilization of technology-based training practices in corporate settings. The selection, development, organization and delivery of training to adult learners are tied to instructional development systems. Special attention is given to the role of instructional technologists and the skills, responsibilities and job requirements of the position.

5570. Ethical, Legal and Professional Issues in Computing. 3 hours. Focus on research literature and current issues dealing with ethical and legal issues within the computing profession. Includes units on intellectual property, moral philosophy, gender and minority issues affecting computer education.

5580. Readings Seminar in Computer Education and Cognitive Systems. 3 hours. Broad reading in a defined area of technology interaction. Requires the critical evaluation of sources with particular emphasis on methodology and application to educational environments. CECS majors must take this course during the last 6 hours. Prerequisite(s): consent of department.

5600. Technology Applications Assessment. 3 hours. Supervised professional activities that involve developing instructional strategies and assessments for technology applications that can be adapted for all levels of learner. Includes the creation of an instructional unit that is aligned with the Technology Application TEKS at each level. Prerequisite(s): CECS 5020, 5030, 5100 and 5111.

5610. Analysis of Research in Educational Technology. 3 hours. Interpretation, analysis and synthesis of current research in educational technology for the purpose of integrating research methodology and application to educational environments. Prerequisite(s): consent of department.

5800-5810. Studies in Education. 3 hours each. Organized classes specifically designed to accommodate the needs of students and the demands of program development that are not met by the regular offerings. Prerequisite(s): consent of department. Limited-offering basis; may be repeated for credit.

5900-5910. Special Problems. 1–3 hours each. Independent study and research. Prerequisite(s): consent of department and instructor. May be repeated for credit.

5960. Education Institute. 1–6 hours. For students accepted as participants in special institute courses. Prerequisite(s): consent of department.

6000. Philosophy of Computing in Education. 3 hours. Examination of the philosophical underpinnings of use of computers in education: why we are interested in this technology; what we hope to accomplish; intended and unintended changes that will occur by its use.

6010. Theories of Instructional Technology. 3 hours. Examination and understanding of the underlying philosophical approaches to learning and the paradigms that guide instructional design. How the use of computing and other technologies are enabled within each paradigm.

6020. Advanced Instructional Design: Models and Strategies. 3 hours. Provides students with advanced instructional design and development skills as well as the conceptual underpinnings for various instructional design models. Familiarizes students with a number of different design models that can be used in corporate and/or educational settings. Prerequisite(s): CECS 6010.

6030. Emerging Technologies in Education. 3 hours. Investigation of the challenges and opportunities emerging technologies in educational environments. Emphasis on understanding their use to meet educational needs and goals. Prerequisite(s): CECS 6220.

6050. Practicum/Internship. 3 hours. Supervised professional activities in the profession. Students spend a predetermined number of hours working with an appropriate site in education or business. During class meetings, students review practicum experiences and analyze issues associated with a career in the profession. Prerequisite(s): minimum of 15 hours in the program.

6100. Theory and Practice of Distributed Learning. 3 hours. Introduction to current theories of distributed learning systems with application towards planning, development,

utilization and evaluation. Various distributed learning systems are investigated, including applications to distance education. Prerequisite(s): CECS 5210.

6200. Message Design in Education. 3 hours. Study of the relationship between information, meaning, learning and instruction. Principles of message communicating information in learning environments. The design and delivery of educational messages using both verbal and print mediums. Prerequisite(s): CECS 5200 and 5210.

6210. Interactive Video. 3 hours. Utilization of research and application of interactive, multimedia computer technologies in the design and production of interactive learning systems. Emphasis on leading-edge delivery technologies. Prerequisite(s): CECS 5420.

6220. Theory of Educational Technology Implementation. 3 hours. Examination of classic and contemporary research to develop an understanding of the issues of successful technology implementation and the implications in educational environments. Prerequisite(s): CECS 6010.

6230. Advanced Educational Production Design. 3 hours. Advanced design and implementation of educational multimedia and hypermedia products utilizing strategies from message design, human factors research, learning theory and other theoretical and critical approaches. This is a project-based course emphasizing analysis design, development, implementation and evaluation. Prerequisite(s): CECS 5210, 5260, 5420 or equivalent technical production expertise.

6300. Artificial Intelligence Applications. 3 hours. Theoretical and practical educational applications of AI are discussed. Topics studied include neural computing, social issues in AI, natural language processing and robotics. Prerequisite(s): CECS 5100 or equivalent programming course and consent of instructor.

6320. Creating Technology-Based Learning Environments. 3 hours. Study of the design and development of technology infused learning environments. Develops understanding of constructivist philosophy of keeping students active, constructive, collaborative, intentional, complex, contextual, conversational and reflective. Prerequisite(s): CECS 6010, CECS 6020 and CECS 6210.

6400. Educational Technology Systems Design and Management. 3 hours. Analysis of systems and facility design, organizational patterns, administrative strategies, and alternative structures for achieving and evaluating media-based instruction. Includes models and methods of selection, construction, procurement and control of hardware systems in educational settings. Management tools including protection of intellectual property, security issues and budgeting strategies are included.

6510. Analysis of Research in Educational Computing. 3 hours. Students analyze current research in educational computing as a tool for understanding the unique characteristics of technology-based research activities in educational environments. Special consideration is given to strategies for separating influences in research designs that incorporate technology as tools and as variables in the design. Students identify potential dissertation research topics and prepare preliminary reports that are critiqued in class in preparation for doing the dissertation. Prerequisite(s): EPSY 6010, 6020 and 6300 strongly encouraged, or other relevant research experience as approved by the faculty.

6600. Developing Educational Funding Opportunities. 3 hours. The ideal grant is a match between the needs of an organization and the desires of a funding agency. Students examine grants from both viewpoints and build on that knowledge to write effective grant proposals. In addition to investigating some of the logistics of grant-writing, this course examines the relationship between a granting agency and its recipients.

6800. Special Topics in Educational Computing. 3 hours. Organized classes specifically designed to accommodate the needs of students and the demands of program development that are not met by the regular offerings. Prerequisite(s): consent of department. Limited-offering basis; may be repeated for credit.

6900-6910. Special Problems. 3 hours each. Independent study and research in fields of special interest. Conferences with professors in the fields are also included. Problems must be approved in advance by the instructor and the department chair. May be repeated for credit.

6950. Doctoral Dissertation. 3, 6 or 9 hours. To be scheduled only with consent of department. 12 hours credit required. No credit assigned until dissertation has been completed and filed with the graduate dean. Doctoral students must maintain continuous enrollment in this course subsequent to passing qualifying examination for admission to candidacy. May be repeated for credit.

Development and Family Studies, DFST

5030. Practicum, Field Experience, or Internship. 3, 6 or 9 hours each. Supervised professional activities in development and family studies. Registration is on an individual basis and student must have prior consent of professor.

5113. Developmental and Family Theory. 3 hours. Survey of classic and contemporary theories in the fields of human development and family studies, including the role of theory in empirical investigation, conceptual frameworks, strategies of theory building, and an examination of theoretical perspectives useful in the study of behavior.

5123. Human Development Across the Life Span. 3 hours. The processes and stages that individuals undergo as they progress from birth through old age and death are studied from a human ecological perspective. Developmental tasks and concepts are explored.

5133. Advanced Studies in Child Development. 3 hours. Findings and implications of current theory and research in emotional, social, cognitive, language, physical and perceptual development from birth through older childhood.

5143. Cognitive and Language Development. 3 hours. Comprehensive development sequence of cognitive development and language acquisition from birth through adulthood, focusing on theories and research related to cognitive, perceptual and language development, as well as relationships between language and thought.

5153. Social-Emotional Development. 3 hours. Comprehensive developmental sequence of social and emotional development from birth through adulthood. Course content focuses on both theory and research pertaining to the development of emotions and temperament as well as intra- and interpersonal issues of social development.

5163. Diversity in Individuals and Families. 3 hours. Readings considering the mutual effects of children and families and their diverse contexts. A wide variety of individual strengths and needs are identified and examined. Diversity issues discussed include cultural,

ethnic, gender, sexuality, language and developmental differences. Examination of personal and societal attitudes is emphasized.

5313. Parent-Child Interaction. 3 hours. Study of parent development and relationships with children throughout the family life cycle. Focus on empirical studies related to dynamics of parent-child interaction. Impact of parenting upon development and socialization of children.

5323. Parent Education. 3 hours. Empirical knowledge and skills required for education and leadership of parents. Overview of major theoretical and programmatic approaches to parent education. Application of models and techniques.

5413. Family Relationships. 3 hours. An analysis of the influences that affect modern family life; consideration of variant family forms.

5423. Family Problems in Urban Living. 3 hours. Examination of the implications of urban problems and resources for personal and family life.

5433. Partnerships: Family, School and Community. 3 hours. The reciprocal responsibilities of the family, school and community for a child's welfare and education are stressed. Strategies to improve communication and collaboration are emphasized with a focus on family types, cultures, economic conditions, school systems, community services, political forces, advocacy groups and other factors that impact young children and their families.

5800. Special Topics in Developmental and Family Studies. 1-3 hours. Organized classes designed to accommodate the needs of students and demands of program development not met by regular offerings. Short courses and workshops on specific topics are offered on a limited basis, to be repeated only upon demand. May be repeated for credit.

5900-5910. Special Problems. 1-3 hours. Open to graduate students capable of developing a problem independently. Problems chosen by the student and approved in advance by the instructor.

5920. Problems in Lieu of Thesis. 1 hour. Professional paper and oral presentation/defense of that paper under the mentorship of development and family studies graduate faculty member. Pass/no pass only.

5950. Master's Thesis. 3 or 6 hours. To be scheduled only with consent of department. 6 hours credit minimum required. No credit assigned until thesis has been completed and filed with the graduate dean. Continuous enrollment required once work on thesis has begun.

Educational Psychology, EPSY

5000. Introduction to Educational Psychology. 3 hours. Educational implications and applications of research on child development, cognition, learning, motivation and assessment to improve the teaching and learning process.

5010. Human Learning and Motivation. 3 hours. Exploration of the theoretical and applied basis for how the mind processes information in order to facilitate the development of instructional materials. Examination of the impact of motivation and beliefs on the acquisition of information. Prerequisite(s): EPSY 5000.

5030. Practicum. 3-6 hours. Supervised professional activities in educational psychology. Registration is on an individual basis and student must have prior consent of instructor.

- 5031. Internship.** 3–6 hours. Supervised professional internship in educational psychology. Registration is on an individual basis and student must have prior consent of instructor.
- 5050. Educational Research and Evaluation.** 3 hours. Methods and limitations of educational research. Procedures, strengths and limitations of the research process.
- 5100. Action Research for Multicultural Education.** 3 hours. Provides graduate students with opportunities to review the literature on action research and multicultural populations and to develop basic skills in action research methodology related to multicultural education.
- 5210. Educational Statistics.** 3 hours. Descriptive and inferential statistical concepts and techniques commonly used in educational research. Organization of data, graphical representation, measures of central tendency and variability, normal distribution curve, sampling theory and tests of significant differences between related and independent samples.
- 5220. The Evaluation of Educational Programs.** 3 hours. Models for program evaluation with emphasis on design, instrumentation, information processing and data interpretation. The content and methodology of the course are appropriate for educators working in elementary and secondary schools as well as colleges and universities.
- 5230. Cognitive and Performance Evaluations.** 3 hours. Introduction to cognitive and performance measurement and evaluation. Course covers development of knowledge-based tests, development of performance-based tests and the evaluation of training. Measurement strategies for cognitive and performance testing are combined with evaluation strategies.
- 5240. Survey Research Methods in Education.** 3 hours. History of surveys, information needs, sampling design, instrumentation data collection, data processing and report generation.
- 5250. Grant Proposal Writing Techniques.** 3 hours. Investigation of state and federal grant funding sources. Introduction to and application of grant proposal writing techniques.
- 5350. Educational Evaluation and Assessment.** 3 hours. Instrumentation and procedures for evaluating and assessing learning in elementary, secondary and higher education settings, including planning for instruction and assessment, designing and using classroom tests, utilizing performance-based assessment strategies and communicating student progress. Specifics include test specifications, item-writing strategies, item analysis, test construction, test score characteristics, alternative assessment strategies, interpretation of data from standardized tests and grading systems.
- 5550. Learning Theories in Education.** 3 hours. Examination of theories of learning relevant to educational environments. In-depth comparison of principles and theories.
- 5800. Studies of Educational Psychology.** 3 hours. Organized class specifically designed to accommodate the needs of students and the demand of program development that are not met by regular offerings. May be repeated for credit. Prerequisite(s): consent of department.
- 5920. Research Problem in Lieu of Thesis.** 3–6 hours. Research dealing with a significant problem in educational psychology. Prerequisite(s): consent of department.
- 5950. Master's Thesis.** 3–6 hours. To be scheduled only with consent of department. 6 hours credit required. No credit assigned until thesis has been completed and filed with the graduate dean. Continuous enrollment required once work on thesis has begun. May be repeated for credit.
- 6005. Statistical Theory and Simulations.** 3 hours. Statistical theory and simulation of statistical distributions. Topics include factors affecting sampling distributions, sampling from different distributions, Chebyshev's theorem, Central Limit Theorem, probability distributions, statistical distributions (normal, t, chi-square, correlation, regression), Power (sample size, Type I error, Type II error, confidence interval, effect size), Monte Carlo, meta-analysis, bootstrap and jackknife techniques.
- 6010. Statistics for Educational Research.** 3 hours. The application of statistical techniques to research in education; the development of skills in interpreting statistical concepts. Analysis of variance and covariance, multiple comparisons, non-parametric statistics and multiple correlation. Prerequisite(s): EPSY 5210 or equivalent. Required of all doctoral candidates in education.
- 6020. Research Methods in Education.** 3 hours. Introduction to quantitative (survey, experimental design, correlation, causal-comparative, evaluation) and qualitative (case study, observation, action, participant-observation, historical, ethnograph, phenomenology) research methods used in conducting educational research. Prerequisite(s): EPSY 5210 and 6010 or equivalents.
- 6030. Practicum, Field Problem or Internship.** 3 or 6 hours. Assignments may be made in stations either on or off campus. Activities include consultation in research design, data analysis, preparation of data for computer analysis and writing of research reports.
- 6040. Foundations of Educational Psychology.** 3 hours. History of educational foundations, philosophical perspectives, scientific themes and grand theories that give rise to modern educational psychology.
- 6210. Multiple Regression Analysis and Related Methods.** 3 hours. Introduction to and application of multiple regression and related methods to analysis of data from correlational and experimental studies in education and related disciplines. Topics include introduction to the general linear model, simple and multiple linear regression analysis, data inspection and transformation, non-linear regression, trend analysis, cross validation procedures and utilization of statistical software for conducting regression analyses. Prerequisite(s): EPSY 6010 and 6020 or equivalents; EPSY 6240 or equivalent is also recommended.
- 6220. Classical and Modern Educational Measurement Theory.** 3 hours. A comparison of norm-referenced and criterion-referenced reliability, validity, item analysis and test construction. Specifics include classical true score, generalizability and latent trait (Rasch and IRT) theoretical development and applications. Prerequisite(s): EPSY 5350 or equivalent measurement course.
- 6230. Advanced Research Design.** 3 hours. Analysis of data and interpretation of results in various experimental research designs, including factorial, repeated measures, nested and Latin square designs. Prerequisite(s): EPSY 6010 and 6020 or equivalents; EPSY 6240 or equivalent is also recommended.
- 6240. Technology in Research.** 3 hours. Use of data analysis in the planning and implementation of research projects in the disciplines of educational psychology. Emphasis on statistical packages, organization and collection of data, computing hardware and software, and various data display and reporting techniques. Prerequisite(s): EPSY 6010 and 6020.

6250. Advanced Educational Measurement Applications.

3 hours. Advanced measurement theory, item analysis, test construction, reliability and validity. Classical, generalizability, Rasch and IRT techniques are used to provide experience in analyzing and interpreting test data. Prerequisite(s): EPSP 5350 or 6220 or equivalent.

6260. Advanced Seminar in Educational Psychology.

3 hours. Capstone course for doctoral students in the Department of Educational Psychology. Study and discussion of issues related to dissertation research, contemporary issues and new advances in research and theory, and the beginning of dissertation proposal development. Prerequisite(s): students must have completed the departmental research cognate and be in the last 12 hours of course work.

6270. Structural Equation Modeling. 3 hours. Multiple regression, path analysis and factor analysis methods are reviewed. Structural Equation Modeling (SEM) approaches using AMOS, EQS, LISREL, MPLUS and other personal computer application software are presented. The basic SEM approaches include path models, factor models, interaction models, MIMIC models, multi-level models, latent growth curve models and multiple group models. Prerequisite(s): EPSP 6290 or equivalent multivariate statistics course.

6280. Qualitative Research in Education. 3 hours. Focus on the knowledge and skill necessary for naturalistic research; observation, interviewing and other data collection procedures, as well as data retrieval, analysis techniques and reporting procedures. Prerequisite(s): EPSP 6010 and 6020, or equivalents.

6285. Qualitative Data Analysis in Education. 3 hours. Data collection, analysis and interpretation using qualitative methodology such as participant observation and interviewing for data gathering; constant comparative/grounded theory and modified analytic induction for data analysis. Use of computer software programs for qualitative data analysis. Students will complete a qualitative study consisting of at least 45 hours of field work during the term/semester. Prerequisite(s): EPSP 6280.

6290. Multivariate Statistics in Education. 3 hours. History of multivariate statistics, univariate vs. multivariate statistics, matrix algebra, multivariate analysis of variance, canonical correlation, discriminant analysis and multivariate analysis of contingency tables. Prerequisite(s): EPSP 6010 and 6210.

6300. Applied Research in Education. 3 hours. Design, implementation and presentation of research in education. Course will result in a completed research project suitable for presentation to an external audience of peers. Prerequisite(s): EPSP 6010 and 6020.

6850. Selected Topics in Education. 1–6 hours. Organized classes specifically designed to meet the needs of doctoral students in the College of Education. Intensive study of a selected timely topic.

6900. Special Problems. 1–3 hours. Research by doctoral students in fields of special interest. Includes project research studies and intensive reading programs. Conferences with professors in the fields also are included.

6950. Doctoral Dissertation. 3, 6 or 9 hours. To be scheduled only with consent of department. 12 hours credit required. No credit assigned until dissertation has been completed and filed with the graduate dean. Doctoral students must maintain continuous enrollment in this course subsequent to passing qualifying examination for admission to candidacy. May be repeated for credit.

Special Education, EDSP**5010. Characteristics of Individuals with Mental Retardation.**

3 hours. An overview of the field of mental retardation and developmental disabilities that includes an analysis of definitions, etiological factors, classification schemes and intervention models. Prerequisite(s): EDSP 5710 or consent of department.

5105. Nature and Needs of the Gifted and Talented Student.

3 hours. Introduction to the intellectual, social, emotional and educational characteristics and needs of gifted, talented and creative individuals. Includes study of varied conceptions of gifted, talented and creative research findings.

5110. Social and Emotional Components of Giftedness.

3 hours. Review of current research on affective growth and potential adjustment problems of gifted youth. Addresses vocational concerns, self-concept and self-esteem, the teacher's role in preventing or remediating affective problems related to giftedness, and potential parenting or family problems.

5120. Program Planning for the Education of Gifted and Talented Students.

3 hours. Instruments and procedures for identification of gifted, talented and creative students. Major curriculum and program models; evaluation of programs.

5130. Methods and Curriculum for Teaching Gifted and Talented Students.

3 hours. Curriculum theory, methods and materials to meet the special educational needs of gifted, talented and creative children. Strategies for individual assessment, modification of standard curriculum, design of instructional materials and classroom organization for grades K–12. Includes theories and models of creativity and higher-level thinking.

5200. Characteristics of Individuals with Learning Disabilities.

3 hours. Overview of the field of learning disabilities that includes an analysis of definitions, etiological factors, classification schemes and intervention models. Prerequisite(s): EDSP 5710 or consent of department.

5210. Collaboration for Inclusion Settings.

3 hours. Consultation models, practices and principles as applied in the education of exceptional and at-risk children and youth. Models advocating collaboration, cooperative learning and full inclusion are stressed. The applicability of consultation models to learning strategies curriculum is a focal point. Prerequisite(s): consent of department.

5220. Learning Strategies for Individuals with Cognitive Disorders.

3 hours. Focus on learning strategies designed for individuals with disabilities. Prerequisite(s): EDSP 5010, 5200 and 5600, or consent of department.

5230. Advanced Seminar in Learning Disabilities: Educational Theories and Practices.

3 hours. Focused analysis of the theoretical basis of learning disabilities and the instructional implications and applications of those theories. Prerequisite(s): EDSP 5200 and 5220, or consent of department.

5240. Collaboration with Parents, Paraeducators and Professionals.

3 hours. Communication and collaboration models and strategies in working with parents, caregivers and professionals concerned about exceptional learners. Emphasis on the changing definition of families and changing demographics and the implications these changes have for effectively involving others in the decision-making for exceptional learners. Analysis made of legal mandates and availability of resources to ensure quality services for exceptional learners.

5320. Introduction to Functional Assessment. 3 hours. Focuses on various dimensions of functional assessment of behavior and academic performance of children and youth with disabilities and/or at-risk for academic and social failure. Emphasis on a process for conducting functional assessments and gathering information applicable to the development of effective positive behavioral supports and intervention plans. Prerequisite(s): EDSP 5710 or equivalent; EDSP 5600 or 5730; consent of department.

5321. Authentic Assessment. 3 hours. Focus on the development of knowledge and the practical skills necessary for the effective administration and interpretation of authentic assessment. Focus on the use of authentic assessment to document student achievement gains among diverse and exceptional learners. Prerequisite(s): EDSP 5510 and 5710.

5330. Classroom and Behavioral Management Strategies for Exceptional Learners. 3 hours. Focus on a variety of classroom-based approaches to aid in the behavioral management of exceptional learners. Students learn how to implement individualized techniques including applied behavioral analysis, as well as larger-group strategies, to foster positive behavioral, social and emotional growth. Special attention is given to the development of behavioral intervention plans and positive behavioral supports for students with challenging behaviors.

5350. Educational Programming for Students with Autism Spectrum Disorders. 3 hours. Focus on the unique programming needs of students with autism spectrum disorders. Specific educational and behavioral interventions are discussed as well as several of the more controversial therapies. Characteristics associated features of students with autism and Asperger's Syndrome are presented. Prerequisite(s): EDSP 5710 or equivalent, consent of department.

5360. Assessment of Autism Spectrum Disorders. 3 hours. Focuses on the assessment needs of children with autism spectrum disorders. The various components of a complete education evaluation are discussed as well as how to apply assessment information in planning the programming needs for children with autism spectrum disorders. Various evaluation tools and procedures are reviewed and demonstrated. Prerequisite(s): EDSP 5710 or equivalent; EDSP 5510, consent of department.

5370. Autism Across the Life Span. 3 hours. Examination of the needs of children and youth with autism spectrum disorders across the life span. Numerous issues are examined in depth along with the implications that each issue has for maximizing individual potential. Prerequisite(s): EDSP 5710 or equivalent; EDSP 5350 and 5360; or consent of department.

5410. Advanced Practicum: Gifted and Talented. 3 hours. (1;5; other—30 hours of supervised experience per week) Demonstration in a gifted and talented educational setting of professional competencies during a minimum 110 hours of supervised practicum experiences. Responsibility for development and implementation of educational plans for gifted and talented learners. Teacher role identification and relationships are examined in structured seminars. Prerequisite(s): EDSP 5105, 5110, 5120 and 5130, or consent of instructor.

5420. Field Experience with Children and Youth with Learning Disabilities. 3 hours. Supervised field experience with children and youth with learning disabilities. Typically, placement will be within a minimum of two educational

settings. Prerequisite(s): EDSP 5200, 5210, 5220, 5230 and consent of department. Students must apply for consent to take this course at least six weeks prior to enrollment. Students may enroll for 1 to 6 hours credit in any given term/semester; field experience of 2.5 hours per week required for each hour of enrollment.

5430. Advanced Practicum: Special Education. 3 hours. Demonstration in a special education setting of professional competencies during a minimum 110 hours of supervised practicum experiences. Responsibility for development and implementation of individualized plans for the exceptional learner. Special education teacher role identification and relationships are examined in structured seminars.

5510. Educational Appraisal of Exceptional Learners. 3 hours. Examinations of basic testing procedures and terminology as related to the exceptional learner. Analysis of statistics used in test development and interpretation of test data. Utilization of test data in developing individual education plans. Examination of curriculum-based assessment issues. Field experiences include administration of academic and teacher-made assessments.

5520. Special Education Law. 3 hours. Provides teachers, educational diagnosticians and school administrators the opportunity to examine the legal requirements for educating special populations, particularly individuals with disabilities. A course fee of \$600 per term/semester is assessed for IMPACT candidates.

5530. Individualized Diagnostic Assessment I: Practicum. 3 hours. Demonstration of competency in developing test batteries for students with different handicapping conditions and in administering and interpreting the batteries. Development of an individual plan for each battery administered. Prerequisite(s): EDSP 5510.

5540. Individualized Diagnostic Assessment II: Practicum. 3 hours. Demonstration of competency in administration, scoring and interpreting test instruments appropriate for students with different types of handicapping conditions. Development of test batteries for students at varying age levels. Prerequisite(s): EDSP 5510 and 5530.

5560. Assistive Technology. 3 hours. Review of recent legislation governing the need and use for assistive technology for individuals with IEP or 504 plans. Issues concerning assessment, ownership, costs and availability are reviewed. Prerequisite(s): EDSP 5710.

5600. Characteristics of Children/Youth with Emotional and Behavioral Disorders. 3 hours. Overview of topics related to children and youth with emotional and behavioral disorders, including characteristics, assessment, diagnosis and evaluation. Investigation of risk factors for the development of severe behavioral problems and classroom-based interventions. Prerequisite(s): EDSP 5710 or consent of department.

5610. Educational Theories and Practices Relative to Children/Youth with Emotional and Behavioral Disorders. 3 hours. Analysis of various theoretical approaches that includes the psychodynamic, ecological and behaviorist theories utilized in designing intervention programs for individuals with emotional and behavioral disorders. Emphasis upon the application and effectiveness of approaches in a variety of educational and therapeutic environments. Prerequisite(s): EDSP 5600 or equivalent.

5615. Positive Behavioral Interventions in Educational and Related Settings. 3 hours. Examination of the positive behavioral interventions and supports (PBIS) philosophy and its underlying assumptions regarding delivery of services to children and youth. Approaches for implementation are highlighted with a focus on school-wide, classroom-wide, and individual interventions, along with the implementation of PBIS for development of systems-of-care, wraparound, and full-service schools. Prerequisite(s): EDSP 5600, EDSP 5710, or EDSP 5730, or consent of department.

5620. Educational Programming for Children/Youth with Emotional and Behavioral Disorders. 3 hours. Emphasis is upon designing effective and efficient intervention programs for children/youth with emotional and behavioral disorders that are applicable to a variety of educational settings to include hospitals, mental health centers, and public and private schools. Prerequisite(s): EDSP 5600; EDSP 5610 (may be taken concurrently).

5630. Field Experience with Children/Youth with Emotional and Behavioral Disorders I. 3 hours. Supervised field experience with children and youth with emotional and behavioral disorders. Placement is in a minimum of two educational settings. Prerequisite(s): EDSP 5600 and consent of department. Students must apply for consent to take this course at least six weeks prior to enrollment. Field experience of 2.5 hours per week required for each hour of enrollment.

5640. Field Experience with Children/Youth Emotional and Behavioral Disorders II. 3 hours. Supervised field experience with children and youth with emotional and behavioral disorders. Placement is in educationally related environments. Prerequisite(s): EDSP 5600 and 5630, and consent of department. Students must apply for consent to take this course at least six weeks prior to enrollment. Field experience of 2.5 hours per week required for each hour of enrollment.

5650. Special Education in Juvenile Correctional Facilities. 3 hours. An overview of the juvenile justice system and correctional education with emphasis on the role of the special educator in meeting the needs of the handicapped juvenile offender.

5660. Transition of Youth with Emotional and Behavioral Disorders. 3 hours. An examination of all aspects of the transition of secondary school-aged youth from educational to community-based environments. Includes the rationale for transition programming, practices and procedures, interagency cooperation, school-based vocational preparation and work-study activities. Emphasis is placed on the role of the special education teacher in the transition process. Prerequisite(s): EDSP 5600 and consent of instructor.

5665. Advanced Transition Planning for Students with Emotional/Behavioral Disorders. 3 hours. Focuses on the taxonomy of transition as a model for planning, implementing and evaluating transition-focused education for students with disabilities. Emphasis on student-focused planning, student development, interagency collaboration, family involvement and program structures. Prerequisite(s): EDSP 5660.

5670. Teaching Social Skills to Children and Youth with Disabilities. 3 hours. An examination of theories underlying the acquisition of social skills by children

and youth with disabilities. Specific teaching strategies, materials development and program implementation will be emphasized.

5684. Traumatic Brain Injury I. 3 hours. General overview of concepts and issues related to traumatic brain injury (TBI) in children/youth. Content is designed to provide professional educators with foundational knowledge and skills necessary to proactively support students with TBI and their families. Focus is on the definition of TBI, historical perspective of brain injury, basics of typical brain functioning, types of brain injury and their effects, issues related to school re-entry, rehabilitation, family issues, and transition. Prerequisite(s): consent of department.

5685. Traumatic Brain Injury II. 3 hours. Gives students the opportunity to work as part of a collaborative team to analyze case studies, formulate school re-entry plans, and develop instructional and behavioral strategies for working with children and youth with traumatic brain injury. Included are a review of the common cognitive and psychosocial effects of traumatic brain injury, reintegration into school following the injury, individualized education planning, and transition plans for children and youth recovering from brain injury. Assessment, classroom strategies and the use of effective collaborative and teaming techniques will be emphasized. Prerequisite(s): EDSP 5684 and consent of department.

5710. Special Education Programs and Practices. 3 hours. Presentation of special education roles, placement alternatives, legal implications, current status and trends in special education. Analysis of categories of exceptionality, characteristics and terminology.

5720. Analysis of Research and Research Design in Special Education. 3 hours. Interpretation, analysis, synthesis and application of research with exceptional populations. Demonstration of oral and written competence in specialization field and related areas.

5730. Educational Aspects of Students with Mild to Moderate Disabilities. 3 hours. Examination of historical, theoretical and learning of students with mild to moderate disabilities, including learning disabilities, mental retardation and emotional/behavioral disorders. A life span view of intervention models, as well as curricular adaptations across content areas is explored.

5740. Learning Strategies for Promoting Proficiency in Reading and Language Arts for Exceptional Learners. 3 hours. Educational strategies and interventions that promote academic performance of individuals with mild to moderate disabilities in English language arts and reading.

5750. Learning Strategies for Promoting Proficiency in Math and Content Area Subjects for Exceptional Learners. 3 hours. Educational strategies and interventions that promote academic performance of individuals with mild to moderate disabilities in mathematics and in content areas across a variety of settings and situations.

5755. Adapting Curriculum to Meet Special Learning Needs. 3 hours. Instructional strategies and curriculum modifications for working with special needs and diverse learners in the inclusion classroom. Topics include curriculum based assessment, adapting materials for special needs learners, appropriate interpretation of inclusion legislation, effective use of technology in an inclusion classroom, legal rights of special needs learners, strategies that facilitate learning and culture fair assessment practices. Prerequisite(s): admission into graduate program.

5760. Multicultural Theory and Best Practice in Special Education. 3 hours. Focuses on learners with special needs from a multicultural perspective. Students explore the impact of an individual's interactions and learning when a diverse cultural or linguistic background coexists with a disability or giftedness. Attention is given to multicultural theories and best teaching practices.

5800. Studies in Special Education. 3 hours. Organized classes specifically designed to accommodate the needs of students and the demands of program development that are not met by the regular offerings. Short courses and workshops on specific topics organized on a limited-offering basis, to be repeated only upon demand. May be repeated for credit.

5900-5910. Special Problems. 1–3 hours each. Open to graduate students who are capable of developing a problem independently. Problems chosen by the student and approved in advance by the instructor. Open only to resident students.

5950. Master's Thesis. 3 or 6 hours. To be scheduled only with consent of department. 6 hours credit required. No credit assigned until thesis has been completed and filed with the graduate dean. Continuous enrollment required once work on thesis has begun. May be repeated for credit.

6030. Practicum, Field Problem or Internship. 3–6 hours. Supervised professional activities in special education. Registration is on an individual basis. Required of all doctoral candidates.

6270. Analysis of Trends, Issues and Research in Special Education. 3 hours. Investigation and analysis of recent trends, issues and research in special education. Emphasis on how these will affect special education programs. Special attention to competency-based programs, accountability and individualized programming.

6280. Program Analysis in Special Education. 3 hours. Focus is upon the role and responsibility of leadership personnel in special education and the issues and trends relative to the administration and supervision of special education programs.

6290. Special Education and Public Policy. 3 hours. Examination of the current social, political and economic factors influencing the public policy decisions affecting special education programs and practices. Major historical public policy decisions affecting special education are used to examine current and proposed public policy decisions. Prerequisite(s): EDSP 6270 or consent of department.

6300. Program Development for Providing Quality Services to Children and Youth with Emotional and Behavioral Disorders. 3 hours. From the perspective of leadership personnel, emphasis is on examining and designing components required to ensure quality services for children and youth with emotional and behavioral disorders within educational and therapeutic environments. Development of formal proposals for research and practice are a part of the course.

6310. Current Research and Best Practices in the Education and Treatment of Children/Youth with Emotional and Behavioral Disorders. 3 hours. Focus on the analysis of current research and best practices in the field of emotional and behavioral disorders.

6320. Computing Applications for Special Populations. 3 hours. Focus on instructive and adaptive applications of computer technology to the educational and life needs of individuals with exceptional learning, cognitive and/or

behavioral characteristics. Issues related to equity and accessibility are discussed. Prerequisite(s): consent of department.

6410. Theoretical Issues in Learning Disabilities. 3 hours. Analysis of the theoretical issues surrounding a life-span approach to learning disabilities. Emphasis is on the cognitive, social and neuropsychological research applicable to learning disabilities. Educational implications of the research also are addressed.

6440. Research Issues in Special Education. 3 hours. Analysis of current research issues and problems unique to exceptional populations. Content includes design, methodology and statistical topics. Prerequisite(s): EDSP 6270, 6310, 6410; EPSY 6010 and 6210, or consent of department.

6800. Topics in Special Education. 3 hours. Organized seminars designed to accommodate the needs of post-master's level students and the demands of program development that are not met by regular course offerings. Examples of topics that may be covered include: issues related to aggression and violence; implications for prevention and treatments; and strategies to address the needs of diverse learners with special needs and their families. Short courses and special seminars on specific topics organized on a limited-offering basis. May be repeated for credit.

6900-6910. Special Problems. 1–3 hours each. Research by doctoral students in fields of special interest. Includes project research studies and intensive reading programs. Conferences with professors in the fields also are included.

6950. Doctoral Dissertation. 3, 6 or 9 hours. To be scheduled only with consent of department. 12 hours credit required. No credit assigned until dissertation has been completed and filed with the graduate dean. Doctoral students must maintain continuous enrollment in this course subsequent to passing qualifying examination for admission to candidacy. May be repeated for credit.

Special Education Courses Offered at Texas Woman's University

Students wishing to enroll in the following TWU courses will do so through a cross-registration mechanism administered by the School of Graduate Studies at UNT.

EDUC 6023. Practicum in Assessment and Evaluation of Individuals with Disabilities. Required of all doctoral students in special education; administration and interpretation of educational, communicative, audiological and psychological tests given to individuals with disabilities. 7 laboratory hours a week. Prerequisite(s): proficiency in tests and measurements and permission of instructor. May be repeated for credit.

EDUC 6103. Social, Psychological and Educational Aspects of Mental Retardation and Developmental Disabilities. Advanced study of etiology, remediation and education of individuals with mental retardation and developmental disabilities. 3 lecture hours a week. Prerequisite(s): EDUC 5103 or equivalent courses in the area and permission of instructor.

EDUC 6333. Seminar in Emotional and Behavioral Disorders. Study of adjustment and emotional problems in individuals assigned to various least restrictive environments. Research related to etiology, conceptual models and interventions. 3 lecture hours a week. Prerequisite(s): EDUC 5303 or equivalent courses and permission of instructor.

EDUC 6403. Seminar in Learning Disabilities. Advanced study of physical, psychological and environmental causes of learning disabilities, and interrelationships among the causes. 3 lecture hours a week. Prerequisite(s): EDUC 5443 or equivalent courses in the area and permission of instructor.

EDUC 6423. Seminar in Policies and Procedures of Special Education Administration. Theory, research and practices related to special education administration. Analysis of administrative behavior, the process of decision making, special education leadership and organization changes, models of state and federal funding, budgeting, litigation procedures and program evaluation. 3 lecture hours a week. Prerequisite(s): EDUC 5603 or equivalent courses in the area and permission of instructor.

EDUC 6723. Practicum. 3–12 hours. Field placement. Type of placement will vary with student's area of major concentration and past experiences. Prerequisite(s): 12 semester hours of doctoral credit or permission of instructor.

EDUC 6903. Special Topics. Variable content; topics selected as needed. 3 lecture hours a week.

Electrical Engineering

Electrical Engineering, EENG

5310. Control Systems Design. 3 hours. Control systems analysis, modeling and design constraints, goals, and performance specifications, state-space analysis of linear systems; Root-locus, frequency response and state-space design methods; MATLAB simulations; system stability-introduction to Lyapunov methods; controllability; observability; canonical forms and minimal realizations, fundamentals of feedback control dynamic programming and the Hamilton-Jacobi-Bellman equation; synthesis of optimum state regulatory systems; introduction to the minimum principle, necessary conditions for optimal trajectories; minimum principle for bounded controls, and time-optimal control of linear systems. Prerequisite(s): EENG 2620 or equivalent.

5520. Digital Integrated Circuit Design. 3 hours. Thorough investigation of the fundamentals in design and analysis of MOS digital integrated circuits. Topics include MOS transistor, transistor circuit design and analysis, interconnect modeling, dynamic logic circuits, memories and low-power circuit design. Prerequisite(s): EENG 2710, EENG 3520 or equivalent.

5530. Analog Integrated Circuit Design. 3 hours. This course thoroughly investigates the fundamentals in design and analysis of analog and mixed-signal integrated circuits. Topics include analog MOS transistor models, current sources and sinks, circuit reference, amplifier, feedback amplifiers, differential amplifiers and operational amplifiers. Prerequisite(s): EENG 3520 or equivalent.

5610. Digital Signal Processing. 3 hours. Introduction to modern digital signal processing theory and techniques. Topics covered include discrete time signals and systems, sampling theorem, Z-transform, frequency analysis of signals and systems, discrete Fourier transform, fast Fourier transform algorithms, digital filter design, and multi-rate digital signal processing. Prerequisite(s): EENG 2620 or equivalent.

5620. Statistical Signal Processing. 3 hours. Introduction to detection and estimation theories. Vector space, multivariate normal distribution, quadratic forms, sufficiency and minimum variance unbiased estimator, hypothesis testing, Neyman-Pearson detection theory, Bayesian detection theory, maximum-likelihood estimation, Cramer-Rao bound, Bayesian and minimum mean-squared error estimators, Kalman filter, least-squares estimation, singular value decomposition algorithm. Prerequisite(s): EENG 4610 and MATH 6810 or equivalent.

5630. Adaptive Signal Processing. 3 hours. Provides students with fundamental knowledge of modern adaptive signal processing theorems and algorithms and their applications in radar and wireless communications. Search algorithms, LMS, RLS adaptive filtering, adaptive signal modeling and applications. Prerequisite(s): EENG 2620, 3910 or equivalent.

5640. Computer Vision and Image Analysis. 3 hours. Introduction to computer vision and image processing, image geometry and photogrammetry, edge detection, feature extraction, shape representation, structural descriptions, object modeling, shape matching, semantic knowledge bases and imaging architectures, depth perception with stereo and photometric stereo, moving scene analysis and object tracking, multi-sensor data fusion, occluded object recognition by multi-sensor/multi-view integration, Computer vision applications.

5810. Digital Communications. 3 hours. Decision theory, signal space, optimal receivers, modulation schemes, error performance, bandwidth, channel capacity, block coding, convolutional coding, trellis coded modulation, intersymbol interference, fading channels and spread spectrum. Prerequisite(s): EENG 3810 or equivalent. (Same as CSCE 5570.)

5820. Wireless Communications. 3 hours. Fundamentals of wireless communications. Topics covered include radio propagation channel characteristics and models, modulation, coding and receiver signal processing techniques in fading channels, multiple access techniques for wireless systems, fundamentals of wireless networks, and major cellular and wireless LAN standards. Prerequisite(s): EENG 5810 or equivalent. (Same as CSCE 5510.)

5830. Coding Theory. 3 hours. Channel coding theorem, error-correcting codes, algebraic block codes, linear codes, BCH codes, convolutional codes, burst-error correcting codes, and design of encoders and decoders. Prerequisite(s): EENG 3810 or equivalent.

5890. Directed Study. 1–3 hours. Study of topics in electrical engineering. The student should prepare a plan for study of a topic and a plan for evaluation of study achievements. Open to students with graduate standing who are capable of developing problems, independently. May be repeated for credit. Prerequisite(s): consent of department.

5900. Special Problems. 1–3 hours. Independent research of a specific problem in a field of electrical engineering. A report is required defining the problem and a solution. Prerequisite(s): consent of department.

5950. Master's Thesis. 3–6 hours. To be scheduled only with consent of department. No credit assigned until thesis has been completed and filed with the School of Graduate Studies. Prerequisite(s): consent of department.

Electronics Engineering Technology

see Engineering Technology