EDF 6940—Supervised Teaching (1-5; max: 5) *Prereq: consent of department chairman.* S/U.

EDF 6941—Practicum in Educational Research (2-9; max: 9) *Prereq: EDF 6403. Arrangements must be made with instructor prior to registration.* Experience in conducting various phases of quantitative or qualitative educational research under individual supervision.

EDF 6971—Research for Master's Thesis (1-15) S/U.

EDF 7117—Affective Development and Education (3) *Prereq: EDF 6113 or equivalent.* Application of theory and research.

EDF 7146—Educational Psychology: Cognition in the Educative Process (3) *Prereq: EDF 6113.* Cognitive development as applied to curriculum development and teaching procedures.

EDF 7405—Advanced Quantitative Foundations of Educational Research (4; max: 8) *Prereq: EDF 6403.* Integrated coverage of important approaches to educational research. Includes application of experimental design, regression analysis, and computer processing to selected educational research problems.

EDF 7412—Structural Equation Models (3) *Prereq: EDF 6436, EDF 7405.* Confirmatory factor analysis and causal models.

EDF 7435—Rating Scale Design and Analysis in Educational Research (3) *Prereq: EDF 6403 and 6434 or 6436.* Development and analysis techniques for questionnaires and rating scales. Applications of psychometric models to item, scale, and rater evaluation; bias detection; factor analysis; and measurement of change.

EDF 7439—Item Response Theory (3) *Prereq: EDF 6436.* Psychometric models for test scores; estimation of ability and item parameters; applications of and current issues in IRT.

EDF 7474—Multilevel Models (3) *Prereq: EDF 6403 or 6481 and 7405.* Models and methods for analysis of multilevel data.

EDF 7479—Qualitative Data Analysis: Approaches and Techniques (3) *Prereq: EDF 6475.* Theories, approaches, and techniques of qualitative data analysis.

EDF 7483—Qualitative Data Collection: Approaches and Techniques (3) *Prereq: EDF 6475.*

EDF 7486—Methods of Educational Research (3) *Prereq: STA 2023. Primarily for Ed.D. candidates.* Examination of research methodologies. Problem identification as well as organization and presentation of data.

EDF 7491—Evaluation of Educational Products and Systems (3) *Prereq: EDF 6403 or equivalent.* Models and methods for formative and summative evaluation of educational products and programs.

EDF 7639—Research in Educational Sociology (3) Research techniques in educational sociology, emphasis on ethnography.

EDF 7931—Seminar in Educational Research (3; max: 6) *Prereq: EDF 6403.* In-depth examination of specific methodological approaches to educational research.

EDF 7932—Multivariate Analysis in Educational Research (3) *Prereq: EDF 6403.* Review of selected studies with focus on methods of data analysis. Emphasis on use of multivariate techniques.

EDF 7979—Advanced Research (1-12) Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy. S/U.

EDF 7980—Research for Doctoral Dissertation (1-15) S/U.

SPS 6052—Issues and Problems in School Psychology (3) *Coreq: SPS 6941.* History and foundations of school psychology; legal, ethical. Overview of role and functions of school psychologist.

SPS 6191—Psychoeducational Assessment I (3) *Coreq: SPS 6941.* Techniques for assessing intelligence, adaptive behavior, and achievement of children and school-aged adolescents. Emphasis on standardized instruments.

SPS 6192—Psychoeducational Assessment II (3) *Prereq: SPS 6191; coreq: SPS 6941.* Techniques for assessing social and emotional functioning of the school-aged child; supervised experience in assessment and report writing.

SPS 6197—Psychoeducational Assessment III (3) *Prereq: SPS 6191; coreq: SPS 6941.* Synthesis of sources and techniques of psychoeducational assessment for school-related application and problems.

SPS 6410—Direct Interventions I: Applied Behavior Analysis for School Psychologists (3) *Coreq: SPS 6941.* Theory and research of applied behavior analysis for school psychologists to provide systematic assesssment and treatment.

SPS 6707—Interventions in School Psychology II: Cognitive Behavioral Interventions (3) *Prereq: SPS 6410.* Theory and practice of cognitive behavior.

SPS 6708—Interventions in School Psychology III: System Level Interventions for Children and Youths (3) *Prereq: SPS 6707.* Theory, empirical research, and clinical issues related to primary prevention and crisis intervention.

SPS 6941—Practicum in School Psychology (1-4; max: 8) *Prereq: consent of instructor.* S/U.

SPS 7205—School Psychology Consultation (3) *Prereq: Coreq: SPS 6941.* Concepts, processes, and issues related to the practice of school-based consultation as an intervention technique of school psychologists.

SPS 7931—Seminar in School Psychology (1-3; max: 3) *Prereq: consent of instructor.* Issues pertinent to the professional practice of school psychology.

SPS 7949—Internship in School Psychology (6 [3 Summer A or B]; max: 18) *Prereq: consent of instructor.*

Electrical and Computer Engineering

College of Engineering

Graduate Faculty 2004-2005

Chair: M. E. Law. *Associate Chair:* R. M. Fox. *Graduate Coordinator:* J. Hammer. *Graduate Research Professor and Pittman Eminent Scholar:* C. T. Sah. *BellSouth Eminent Scholar:* J. Fortes. *Distinguished Professors:* J. C. Principe; S. Y. W. Su; M. A. Uman. *Professors:* G. Bosman; T. E. Bullock *(Emeritus);* D. P. Carroll *(Emeritus);* E. R. Chenette *(Emeritus,* GERC*);* L. W. Couch II *(Emeritus);* J. G. Fossum; A. D. George; J. Hammer; H. Latchman; M. E. Law; J. Li; S. S. Li; F. A. Lindholm *(Emeritus);* A. Neugroschel; K. D. T. Ngo; K. K. O; P. Z. Peebles, Jr. *(Emeritus);* V. A. Rakov; V. Ramaswamy *(Emeritus);* M. H. Rashid (UWF); J. R. Smith *(Emeritus);* R. Srivastava; F. J. Taylor; P. Zory. *Engineer:* J. L. Kurtz. *Associate Professors:* A. Arroyo; A. Domijan, Jr.; W. R. Eisenstadt; Y. Fang; R. M. Fox; J. G. Harris; H. Lam; J. Lin; T. Nishida; T. F. Wong; H. Zmuda (GERC). *Assistant Professors:* R. Bashirullah; P. O. Boykin; R. Figueiredo; J. Gao;J. Guo; J. McNair; J. M. Shea; K. C. Slatton; E. Sutton (GERC); A. Ural; D. O. Wu; H. Xie; L. Yang.

The Department of Electrical and Computer Engineering offers the Master of Engineering, Master of Science, Engineer, and Doctor of Philosophy degrees. Complete descriptions of the minimum requirements for these degrees are provided in the *General Information* section of this catalog.

The Department offers graduate study and research in computers, devices, electromagnetics and energy systems, electronics, and signals and systems.

Graduate students in the Department of Electrical and Computer Engineering have bachelor's degrees from many areaselectrical engineering, other engineering disciplines, mathematics, physics, chemistry, and other technical fields. The Department of Electrical and Computer Engineering offers both thesis and nonthesis options for the master's degrees.

In the *thesis option* a student shall complete a minimum of 30 semester credit hours with a maximum of 6 semester credit hours of EEL 6971 (Research for Master's Thesis). While the Graduate School sets the minimum requirements, the supervisory committee determines the appropriate number of thesis hours a student shall be required to take for the thesis. Other course requirements include a minimum of 18 hours at the 5000 or 6000 level in electrical and computer engineering. Excluded from satisfying these course requirements are 5905 and 6905 (Individual Work), 6910 (Supervised Research), 6932 (Graduate Seminar), 6940 (Supervised Teaching), and 6971 (Research for Master's Thesis). No more than six hours of Individual Work (5905 or 6905) may be counted toward the degree.

In the *nonthesis option* a student shall complete a minimum of 30 semester credit hours with a maximum of 6 semester credit hours of Individual Work (5905 or 6905). The course requirements include a minimum of 21 semester credit hours at the 5000 or 6000 level in electrical and computer engineering. Excluded from satisfying these course requirements are 5905 and 6905 (Individual Work), 6910 (Supervised Research), 6932 (Graduate Seminar), 6940 (Supervised Teaching), and 6971 (Research for Master's Thesis).

The Department also offers a combined bachelor's/master's degree program. This program allows qualified students to earn both a bachelor's degree and master's degree with a savings of one semester. Qualified students may begin their master's programs while seniors counting up to 12 hours of specified electrical and computer engineering graduate courses for both bachelor's and master's degree requirements. Bachelor's/master's program admission requirements are (1) satisfaction of Graduate School admission requirements for the master's degree, (2) an upper-division (undergraduate) GPA of at least 3.3, and (3) completion of at least 7 EEL core courses and 2 EEL laboratories. Students with a GPA between 3.3 and 3.59 can double count up to 6 hours, while students with a GPA of 3.6 or higher can double count up to 12 hours.

All prospective doctoral students must take the written part of the Ph.D. qualifying examination within the first year of enrollment. Other requirements for the doctoral degree, as well as requirements for master's and engineer degrees, are given in the Electrical and Computer Engineering Department's Graduate Guidelines (see http://www.ece.ufl.edu/graduate/academic/acadinfomain.html) and in the front section of this catalog.

The following course listing indicates the major areas of faculty interest. Special topics courses EEL 5934 and EEL 6935 cover a wide variety of subjects for which there are no present courses.

EEL 5182—State Variable Methods in Linear Systems (3) *Prereq: EEL 4657.* Linear algebra and state variable methods for design and analysis of discrete and continuous linear systems.

EEL 5219—Analysis of Power Transmission Lines (3) *Prereq: EEL 3211, MAS 3114 or equivalents.* Calculation of multiphase transmission line parameters for typical power line configurations. Modal analysis of wave propagation. Line models and computer applications for transient analysis.

EEL 5225—Principles of Micro-Electro-Mechanical Transducers (3) *Prereq: EEL 3396 or permission of instructor.* Introduction to principles of micro-electro-mechanical devices and systems.

EEL 5317C—Introduction to Power Electronics (3) *Prereq: EEL 3304, 3396; coreq: EEL 4657.* Components and circuits for power applications. Switched-mode power supplies.

EEL 5320—Bipolar Analog IC Design (3) *Prereq: EEL 3304.* Amplifier stages, active loads, output stages, op-amps, feedback, frequency response, compensation.

EEL 5322—VLSI Circuits and Technology (3) *Prereq: EEL 3396, 3304.* Introduction to VLSI circuit technology and manufacturing. Fabrication, device models, layout, parasitics, and simple gate circuits.

EEL 5336L—Solid-State Technology Laboratory (1) Solid-state device fabrication. Safety issues.

EEL 5441—Fundamentals of Photonics (3) *Prereq: EEL 3472 and 3396.* Review of electromagnetic fields and waves, energy bands in semiconductors, p-n junctions and optical properties of semiconductors. Fundamentals of optical modulators and switches, laser theory, laser characteristics, photodetectors, optical waveguides, and photonic applications.

EEL 5451L—Photonics Laboratory (2) *Prereq: EEL 4440 or 4445 or 5441.* Experiments in wave optics, acousto-optics, lasers, fiber optics, planar wave guides, and coherent optics.

EEL 5490—Lightning (3) *Prereq: EEL 3472.* Introduction to lightning discharge processes. Electromagnetics relevant to lightning measurements. Applications for determining lightning charge, current, location, and characteristics. Lightning protection.

EEL 5544—Noise in Linear Systems (3) Passage of electrical noise and signals through linear systems. Statistical representation of random signals, electrical noise, and spectra.

EEL 5546—Electronic Countermeasures (3) *Prereq: EEL 4516 or 5544.* Analysis of electronic countermeasures for radar systems. Pulsed and spread spectrum detection; barrage, incoherent, and coherent jammers; burn through analysis; autocorrelation receiver structures.

EEL 5547—Introduction to Radar (3) *Prereq: EEL 4516 or 5544.* Basic principles of cw and pulsed radar; angle, range, and doppler tracking; accuracy and resolution; signal design.

EEL 5666C—Intelligent Machines Design Laboratory (4) *Prereq: EEL 4744C.* Design simulation, fabrication, assembly, and testing of intelligent robotic machines.

EEL 5701—Foundations of Digital Signal Processing (3) Analysis and design of digital filters for discrete signal processing; spectral analysis; fast Fourier transform.

EEL 5718—Computer Communications (3) *Prereq: EEL 4514.* Design of data communication networks: modems, terminals, error control, multiplexing, message switching, and data concentration.

EEL 5745C—Microcomputer Hardware and Software (4) *Prereq: EEL 3701C and 3304 or 3003.* Functional behavior of microprocessors, memory, peripheral support integrated circuit hardware; microcomputer system and development software; applications.

EEL 5764—Computer Architecture (3) *Prereq: EEL 4713C, 4744C, or equivalents.* Fundamentals in design and quantitative analysis of modern computer architecture and systems, including instruction set architecture, basic and advanced pipelining, superscalar and VLIW instruction-level parallelism, memory hierarchy, storage, and interconnects.

EEL 5840—Elements of Machine Intelligence (3) Engineering and hardware concepts pertaining to design of intelligent computer systems.

EEL 5905—Individual Work (1-4; max: 6) *Prereq: consent of adviser.* Selected problems or projects.

EEL 5934—Special Topics in Electrical Engineering (1-3; max: 8)

EEL 6171—Advanced System Theory (4) Structural analysis of linear dynamical systems. Invariance, F and G invariance, constrained reachability, pole assignment and stability, advanced topics in linear algebra useful in mathematical system theory.

EEL 6264—Advanced Electric Energy Systems I (3) *Prereq: consent of instructor.* Energy systems planning and operation with emphasis on advanced analysis methodologies and computer simulation.

EEL 6265—Advanced Electric Energy Systems II (3) *Prereq: EEL 6264.* Continuation of EEL 6264 with additional emphasis given to the new electric energy technologies.

EEL 6321—MOS Analog IC Design (3) *Prereq: EEL 5320 or 6311.* Design of analog circuits in CMOS IC technology. MOS switches, MOS op amp circuits, circuit simulation using SPICE.

EEL 6323—Advanced VLSI Design (3) *Prereq: EEL 5322.* Advanced very large scale integrated circuit design, testability, and performance evaluation. Use of industrial VLSI software. Building an advanced CMOS VLSI circuit.

EEL 6324—Silicon Fabrication Processes (3) *Prereq: EEL 5322.* Advanced modeling of physics of silicon fabrication. Lithography, deposition, etching, oxidation, implantation, and diffusion. Oriented toward silicon device fabrication.

EEL 6325—Computer Simulation of Integrated Circuits and Devices (3) *Prereq: graduate standing.* Basic methods of numerical simulation of semiconductor devices and electronic circuits with reference to PISCES and SPICE. PDE discretization; numerical integration, Newton/iterative linearization, linearized system solution.

EEL 6328C—Microwave IC Design (3) Fundamentals of microwave integrated circuit design. Use of computer software to design simple microwave circuits. Microwave circuit testing.

EEL 6374—Radio Frequency (RF) Integrated Circuits and Technologies (3) *Prereq: EEL 5322, 4306, or equivalent.* Requirements for RF integrated circuits. Design and implementation. Interdependence of RF circuit performance wit devices, parasitics, packages, and process technology.

EEL 6382—Semiconductor Physical Electronics I (3) Crystal structures; imperfections; statistics; lattice dynamics; energy band theory. Equilibrium properties of electrons and holes in semiconductors. Electronic transport phenomena. Boltzmann's equation and transport coefficients in semiconductors.

EEL 6383—Semiconductor Physical Electronics II (3) *Prereq: EEL 6382.* Scattering mechanisms. Recombination-generation and trapping processes; optical properties. Excess carrier phenomena. Photoelectric effects in semiconductors. Metal-semiconductor contacts. Opto-electronic devices. Junction and MOS devices. Superconductors and Josephson Junction devices.

EEL 6390—VLSI Device Design (3) *Prereq: EEL 3396.* Criteria and tradeoffs involved in design of high-performance semiconductor devices in scaled (VLSI) Si-based integrated-circuit technologies.

EEL 6397—Semiconductor Device Theory I (3) *Prereq: EEL 3396.* Semiconductor material properties, equilibrium and nonequilibrium processes, quasi-Fermi levels, pn junctions; charge-control modeling; high level injection, heavy doping effects.

EEL 6398—Semiconductor Device Theory II (3) *Prereq: EEL 6397.* Basic mechanisms in bipolar junction transistors, low- and high-current effects; fundamental principles of the MOS system, surface effects on pn junctions, MOS field-effect transitors.

EEL 6443—Integrated and Fiber Optics (3) *Prereq: EEL 5441.* Review of electromagnetic waves. Dielectric interfaces, propagation in graded-index media, slab waveguides, coupled waveguides, waveguide fabrication and characterization.

EEL 6447—Laser Electronics (3) *Prereq: EEL 3473 and 5441 or equivalent.* Study of lasers from basic principles to operational characteristics.

EEL 6486—Electromagnetic Field Theory and Applications I (3) *Prereq: undergraduate course in fields and waves.* Advanced electrostatics, magnetostatics, time-varying electromagnetic fields, wave propagation, waveguides.

EEL 6487—Electromagnetic Field Theory and Applications II (3) *Prereq: EEL 6486.* Electromagnetic radiation, antennas, wave propagation in anisotropic media.

EEL 6502—Adaptive Signal Processing (3) *Prereq: EEL 5701, 5544.* Theory of adaptation with stationary signals; performance measures. LMS, RLS algorithms. Implementation issues and applications.

EEL 6503—Spread Spectrum (3) *Prereq: EEL 5544 and 6535.* Techniques and applications; spreading sequence design; code division multiple access; multi-user detection.

EEL 6507—Queueing Theory and Data Communications (3) *Prereq: EEL 5544.* Introduction to basic queueing models; performance analysis of multiple access protocols; error control strategies.

EEL 6509—Wireless Communication (3) *Prereq: EEL 5544.* Introduction. Satellite and cellular systems, propagation, modulation techniques, multiple access techniques, channel coding, speech and video coding, and wireless computer networks.

EEL 6524—Statistical Decision Theory (3) *Prereq: EEL 5544.* Hypothesis testing of signals in the presence of noise by Bayes, Neyman-Pearson, minimax criteria; estimation of signal parameters.

EEL 6535—Digital Communications (3) *Prereq: EEL 5544.* Digital modulation techniques; analysis of digital communication systems in presence of noise; optimum principles; synchronization; equalization.

EEL 6537—Spectral Estimation (3) *Prereq: EEL 5544, 5701.* Measurement and analysis of signals and noise. Digital filtering and spectral analysis; fast Fourier transform.

EEL 6548—Radar I (3) *Prereq: EEL 5544.* Basic concepts, wave propagation, antennas, radar equation, cross section, radar signals, detection.

EEL 6550—Error Correction Coding (3) *Prereq: EEL 5544 or equivalent; coreq: EEL 5544 or 4516.* Introduction to abstract algebra, block coding and decoding, convolutional coding and decoding, trellis coded modulation, run-length-limited codes.

EEL 6562—Image Processing and Computer Vision (3) Pictorial data representation; feature encoding; spatial filtering; image enhancement; image segmentation; cluster seeking; two-dimensional z-transforms; scene analysis; picture description language; object recognition; pictorial database; interactive graphics; picture understanding machine.

EEL 6586—Automatic Speech Processing (3) *Prereq: EEL 5701.* Various models of speech production and perception. Operation of speech synthesizers. Discussion of speech recognition. Mathematical models of speech signals.
EEL 6591—Wireless Networks (3) *Prereq: EEL 5718 and knowledge of probability and statistics.* Design and analysis of wireless networks including channel characteristics, physical layer, cellular concepts, multiple access control protocols, FEC and ARQ protocols, resource allocation, and wireless standards.
EEL 6614—Modern Control Theory (3) *Prereq: EEL 5182.* Optimization of systems using the calculus of variations, dynamic programming, and the maximum principle. Extensive study of the linear plant with a quadratic performance index. Observers and dynamic compensators.
EEL 6617—Linear Multivariable Control (3) *Prereq: MAS 4105, EEL 5182.* Transfer matrix theory of systems, emphasis on feedback, internal stability, model matching, and assignment of invariant factors.
EEL 6619—Robust Control Systems (3) *Prereq: EEL 5182.* Analysis and design of multivariable control systems in presence of uncertainties.
EEL 6667—Kinematics and Dynamics of Robot Manipulators (3) Algebraic formulation of robot manipulator motion. Homogeneous matrices. Methods for computing forward and reverse kinematic solutions of robot manipulators. Robot differential displacements and Jacobians. Newton-Euler and Lagrangian derivations of manipulator dynamics.
EEL 6668—Intelligent Robot Manipulator Systems (3) *Prereq: EEL 6667.* Trajectory planning and computation for robot manipulators. Splines. Force compliance and hybrid control. Machine perception and intelligence: touch, vision, collision avoidance, automatic task planning. Modeling a robotic manufacturing work cell. Robot computer languages.
EEL 6702—Digital Filtering (3) *Prereq: analysis and design of digital filters.* Introduction to number transforms, complexity of algorithms, and finite fields. Development of transforms and digital filter using algebraic operators and finite fields plus the technological consideration of DSP system and system integration.
EEL 6706—Fault-Tolerant Computer Architecture (3) *Prereq: EEL 5764 or CDA 5155.* Design and quantitative analysis of fault-tolerant architectures and dependable systems including fundamental issues, redundancy techniques, evaluation methods, design methodology, and applications.
EEL 6763—Parallel Computer Architecture (3) *Prereq: EEL 5764.* Advanced architecture emphasizing design and quantitative analysis of parallel architecture and systems, including theory, hardware technologies, parallel and scalable architectures, and software constructs.
EEL 6767—Database Engineering (3) *Prereq: EEL 4713C.* Architecture of database management system, data models and languages, design, integrity, security, concurrency control, distributed database management.
EEL 6769—Hardware-Software Interactions: Nonnumeric Processing (3) *Prereq: EEL 6767 or COP 5725 or consent of instructor.* Information representations; content and context search methods; associative memories, retrieval language mapping; parallel processing; hardware and software garbage collections.
EEL 6785—High-Performance Computer Networks (3) *Prereq: EEL 5718 or CEN 6505.* Design and quantitative analysis of high-speed networks and interconnects including protocols, hardware and software interfaces, switching, light-weight communication layers, flow and error control, and quality of service.
EEL 6814—Neural Networks for Signal Processing (3) *Prereq: EEL 6502.* Optimal filters in vector spaces. Linear machines and discriminant functions. Gradient descent learning in additive neural model. Performance measures of multilayer perceptions and Hopfield. Dynamic neural networks and issues of short term memory; unsupervised learning; feature extraction, data reduction; potential functions; syntactic pattern description; recognition grammars; machine intelligence.
EEL 6825—Pattern Recognition and Intelligent Systems (3) Decision functions; optimum decision criteria; training algorithms; unsupervised learning; feature extraction, data reduction; potential functions; syntactic pattern description; recognition grammars; machine intelligence.
EEL 6841—Machine Intelligence and Synthesis (3) *Prereq: EEL 5840.* Theory of machine intelligence applied to general problem of engineering intelligent computer systems and architecture. Applications emphasized.
EEL 6892—Virtual Computers (3) *Prereq: EEL 5764 or COP 5615 or equivalent.* Techniques for virtualization of networked computer systems. Virtual machines (classic VMs, application binary interface VMs, para-virtualization) virtual distributed file systems (file system proxies, call-forwarding) virtual networks (tunneling, virtual private networks).
EEL 6905—Individual Work (1-4; max: 6) *Prereq: consent of adviser.* Selected problems or projects.
EEL 6910—Supervised Research (1-5; max: 5) S/U.
EEL 6935—Special Topics in Electrical Engineering (1-4; max: 12, including EEL 5905 and EEL 6905)
EEL 6940—Supervised Teaching (1-5; max: 5) S/U.
EEL 6971—Research for Master's Thesis (1-15) S/U.
EEL 6972—Research for Engineer's Thesis (1-15) S/U.
EEL 7936—Advanced Topics in Electrical Engineering (1-4; max: 6)
EEL 7979—Advanced Research (1-12) Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy. S/U.
EEL 7980—Research for Doctoral Dissertation (1-15) S/U.

Engineering–General

College of Engineering

Dean: P. P. Khargonekar. *Associate Dean:* C. R. Abernathy.

EGN 5949—Practicum/Internship/Cooperative Work Experience (1-6; max: 6) *Prereq: graduate student.* Practical cooperative engineering work under approved industrial and faculty supervision. S/U.
EGN 6640—Entrepreneurship for Engineers

English

College of Liberal Arts and Sciences

Graduate Faculty 2004-2005

Chair: J. P. Leavey. *Graduate Coordinator:* K. Kidd. *Graduate Research Professor:* J. Seelye. *Marston/Milbauer Professor of English:* N. N. Holland. *Professors:* D. D. Ault; R. E. Brantley; R. Burt; R. H. Carpenter; J. O. Cech; J. Ciment; I. G. Clark; D. Greger; S. R. Homan; R. B. Kershner, Jr.; J. P. Leavey; D. Leavitt; D. Leverenz; W. Logan; K. McCarthy; B. McCrea;