Course Descriptions

Note: This is a list of all approved courses that may be offered. The list of courses to be offered in a particular semester or summer term appears in the Class Schedule for that term on AU BannerWeb: (https://banweb.alfred.edu).

Art

ART 500 - Special Topics in Art 1 or 4 hours. Topics and issues not covered in other courses are explored. Topics vary from one term to another.

ART 501 - Studio Elective 1-6 hours. Required for all MFA graduate students. The studio elective gives students an opportunity to work in media that they are unfamiliar with or that might be incorporated into their studio work. Students must work in a media and studio outside their primary discipline. Any exceptions must be made in consultation with the appropriate advisor. Enrollment is by permission of the studio faculty.

ART 522 - Advanced Sculpture/Dimensional Studies 1-8 hours. This is the primary component of individually directed/generated studio research during the first year of graduate studies in the program. The focus of the graduate student's critical inquiry is done in consultation with the specific division's faculty who are responsible for either the concentration in Sculpture or Glass Art.

ART 523 - Work and Analysis 4 hours. Functions as the primary forum for group dialogue among the MFA students in Electronic Integrated Arts. Regular group critiques of student work will occur during class time, allowing for the development of understanding of how work is produced, and the ability to contribute insight to others. Narrative, symbolic, personal, cultural and poetic implications will be addressed. In addition to dialogue relative to student's work, questions pertinent to contemporary art practice will be discussed weekly. This discussion will include debates on contemporary artists and current philosophical approaches to image making both critical and aesthetic. The goal is to provide the student with a strengthened sense of context from which to proceed as an artist.

ART 524 - Electronic Strategies (Non time based) 2 hours. Required of first year graduate students working in Electronic Integrated Arts. This course is designed to help create a context in which to ask questions about the nature of dynamic media relative to the making of contemporary printed images. Students will work with moving and still images using combinations of digital processes, including: video capture, digital drawing, electronic still cameras, scanning and image processing. Participants will investigate the making of large format digital images as ways to understanding how ideas about print media are expanding. The course will focus on the impact of digital print media and how it functions to construct the visual languages of contemporary art making. Experimentation with applications that cross media will be extensively explored. These media may include: drawing, painting, photography, bookmaking, video, multimedia and Internet interfaces. The studio comprises a state of the art Macintosh lab with scanning, video editing and grabbing capabilities and Internet interfaces. Printing capabilities include film recording, image setting, and a large variety of digital color printing devices including wide format digital printing.

ART 525 - Advanced Electronic Arts 1-8 hours. Required each semester for graduate students working in Electronic Integrated Arts. Each graduate student will register with Electronic Integrated Arts faculty on an independent study basis. This course is an opportunity for self-generated studio work. During the third and fourth semesters the primary emphasis of this course will be thesis preparation.
ART 526 - Electronic Strategies (Time based) 2 hours. Required of first year graduate students working in Electronic Integrated Arts. This course provides both a technical and theoretical foundation for the production of time-based works in the integrated video and sound studios. Experimentation with application that crosses media will be extensively explored. These media may include analog and digital video image processing, digital video editing, HD video, computer animation, web casting and electronic music in relationship to the visual arts. Through demonstrations, critiques and lab work students will gain a thorough understanding of the technical process as well as insights and expertise into the physical integration of traditional mediums with new technologies. Emphasis will be placed on the making of artwork through the use of electronic integrated media. The course will also include presentations, class discussions and readings designed to create a critical dialogue that connects theoretical, historical and contemporary perspectives through the practice of making art using electronic media. Areas of theoretical concern will include historical and contemporary perspectives on imaging and sound technologies.

ART 529 - Studio Practice 2 hours. This seminar is a forum for the graduate students in the Sculpture/Dimensional Studies program to engage in discussions and group critiques. Through a series of weekly meetings all of the students in both Glass Art and Sculpture come together to form a community of creative enquiry, to consider relevant contemporary art issues and support each other's art practice.

ART 550 - Independent Study 1-4 hours. Designed for graduate students to work with faculty outside of the School of Art and Design. Enrollment is by permission of the faculty and with approval of the respective Division Chair. A written Plan of Study is required.

ART 552 - Advanced Ceramics 1-8 hours. This is the primary component of the first year of ceramic art graduate studies. The focus is on individually directed studio research in consultation with the faculty. Studio work is evaluated at the midterm and final reviews by the entire faculty. Students work individually with a different faculty advisor each semester.

ART 560 - Ceramic Graduate Seminar 2 hours. This seminar is required for first year, second semester graduate students in Ceramic Art. It is a faculty structured, student generated, and research discussion group course focusing on the history of contemporary ceramic art, mid 19th century to the present. It is intentionally founded on principles of artist studio practice rather than on academic art history methodologies.

ART 580 - Alfred Summer Ceramics 4 hours. Open to students of all levels of expertise. This 4-week intensive summer session offers a comprehensive ceramic experience ranging from ceramic art history and glaze calculation to working with clay fabrication techniques. Participants are given personal studio space and an opportunity to deepen their understanding of clay and glaze by firing in gas, electric, wood, raku and soda kilns. Participants work alongside artists-in-residence in an open studio environment and are able to pursue self-directed projects. Technical support is provided by Alfred MFA students in kiln firing, mold-making and casting; slide lectures and discussion by faculty and guest artists will regularly punctuate the studio experience. (Summer)
ART 581 - Introduction to Kiln Procedures and Construction 2 hours. The focus of this course is the theory and practice of kiln types and firings, fuel and heat sources and refractory materials. Students design their own kiln including detailed blueprints, calculations for gas and heat input and a materials source list. (Fall)

ART 582 - Ceramic Materials I: Claybodies and Glazes 2 hours. This course covers the fundamentals of body and glaze development focusing on ceramic raw materials and their role in forming and firing for functional ware and sculpture bodies. Glaze formulations are also discussed, including glaze chemistry, texture, and causes of common defects.

ART 583 - Ceramic Materials II: Problem Solving for Artists 2 hours. This is an open forum discussion-based course that builds on ART 582-Ceramic Materials I and stresses the application of ideas and concepts to solve studio problems. Students are expected to participate in the discussion, to bring examples of problems, and share the results of experiments to rectify those problems. Prerequisite: ART 582.

ART 587 - Introduction to 3D Modeling and Rapid Prototyping 2 hours. This course offers visualization and digital fabrication techniques using computer software and rapid prototyping equipment. Fundamental techniques in computer modeling using Rhino 3D software are covered. Through tutorials and in-class demonstrations, students learn to create 2D drawings and 3D objects. (Can be taken 3 times for credit.)

ART 590 - Methods for Digital Output 2 hours. This course compliments ART 587-Intro to 3D modeling and Rapid Prototyping, allowing the student to acquire a practical application for 3D modeling through use of CAD (SolidWorks, Rhino), CAM (Delcam for SolidWorks, RhinoCam and Mastercam), and reverse engineering software (Rapidworks, Scanstudio). Students learn technical competency in contemporary technology for 3D fabrication. (Can be taken 3 times for credit)

ART 601 - Studio Advising Support 1-8 hours. Provides graduate students an opportunity to work with faculty outside of their division. Enrollment is by permission of the faculty, based on space/time availability and with approval of respective Division Chair.

ART 671 - Written Thesis Preparation for Electronic Integrated Arts 4 hours. The studio work is supported by a written thesis report that includes a detailed statement about the work, a technical documentation of materials and processes used, and a DVD of thesis work. This documentation is archived in the Scholes Library. Additionally, the course is structured as a seminar with all second year EIA MFA students participating.

ART 672 - Written Thesis Preparation 2 hours. The studio work is supported by a written thesis report that includes a detailed statement about the work, a technical documentation of materials and processes used, and 20 slides of the thesis work. This documentation is archived in the Scholes Library. Additionally, the course is structured as a seminar with all Ceramic Art and Sculpture/Dimensional Studies MFA students participating.

ART 680 - Thesis-Ceramic Art 1-8 hours. The ceramic art thesis is a body of work that is presented in a gallery exhibition at the end of the fourth semester of study. Students work with individual faculty studio advisors, with midterm and final reviews by the entire ceramic faculty. The faculty will choose a work from the
exhibition for the Glory Hole Collection of the Schein-Joseph International Museum of Ceramic Art at Alfred.

**ART 681 - Thesis-Electronic Integrated Arts** 1-8 hours. Required each semester for graduate students working in Electronic Integrated Arts. Each graduate student will register with Electronic Integrated Arts faculty on an independent study basis. This course is an opportunity for self-generated studio work. During the third and fourth semesters the primary emphasis of this course will be thesis preparation.

**ART 682 - Thesis-Sculpture/Dimensional Studies** 1-8 hours. This course embodies the studio component of the written thesis. The focus is on the continuation of individually directed studio research in consultation with the faculty. A body of work is presented in a gallery exhibition at the end of the fourth semester of study.

### Art History

**ARTH 500 - Topics in Art History** 2 or 4 hours. Topics vary from semester to semester.

**ARTH 501 - African Art I** 4 hours. A survey of the arts of sub-Saharan Africa with an emphasis on sculpture. The course focuses on the role art plays in African cultures and also introduces students to a wide range of art forms and styles.

**ARTH 502 - African Art II** 4 hours. Continuation of ARTH 501, a survey of the arts of sub-Saharan Africa.

**ARTH 504 - Global Arts: Contemporary Asia** 4 hours. This course examines contemporary arts of Japan, China, North/South Korea, India, Pakistan, Tibet, and Vietnam, with a focus on emerging theories of global arts and diverse art practices, such as curating, viewing, and the making of Asian art today.

**ARTH 511 - Pre-Columbian Art** 4 hours. A survey course that acquaints students with major monuments and styles of Pre-Columbian American art, including: architecture, sculpture, ceramics, dress, and body adornment. Examined are several millennia of pre-contact art traditions in Meso America and South America from earliest art producing cultures to the Aztecs and Incas. The course looks at archaeological contexts and investigates possible meanings for art and written records dating from early periods that enhance our understanding of later cultures.

**ARTH 521 - Topics in Greek and Roman Art and Architecture** 4 hours. A study of art and architecture from ancient Greece and Rome. Among other issues, the course addresses changing attitudes of style, function, and patronage during this period and investigates the influence of social and religious belief. The study of Greek art emphasizes the development of stylistic periods. Roman art study focuses on individual historical periods of various emperors as reflected in the patronage.

**ARTH 522 - Medieval Art and Architecture** 4 hours. This course explores medieval art--architecture, painting, sculpture and the decorative arts--through the study of subject matter and the major stylistic developments from the religious and secular spheres of medieval society. Other topics include patronage; artistic production; and workshop practices.
ARTH 523 - Medieval Architecture, AD 300-1500 4 hours. This course focuses on architecture and architectural sculpture. It traces the development of Imperial and Byzantine architecture of the Mediterranean region and then investigates early medieval, Romanesque and Gothic architecture. Topics discussed include the imperial tradition, the Pilgrimage Road, the monastic orders, birth of Gothic style under the patronage of Abbott Suger, and the development of High Gothic, both secular and ecclesiastical.

ARTH 531 - Italian Renaissance Art 4 hours. An in-depth study of the Renaissance Period and its theories. Artistic developments in Italy are emphasized.

ARTH 532 - Northern Renaissance Survey 4 hours.

ARTH 533 - Baroque Art and Architecture 4 hours. This class is a survey of European art and architecture during the 17th century within cultural, religious, political and intellectual frameworks. Main themes include: the impact of the Counter Reformation on the visual arts; urban planning; art as propaganda; specialization of the art market; rise of art academies and art theory.

ARTH 542 - Primitivism: A Western Perspective 4 hours. This course surveys the concept of the "primitive" in Western art from the Enlightenment to the present. Students explore the shifting nature of primitivism, examine the relationship between art and colonial expansion, and critique the formal and thematic appropriation of non-Western artifacts by European and American artists.

ARTH 543 - Modern Art 4 hours. Encompassing the movements of Symbolism to Surrealism, this course covers the developments in modern art during the first half of the 20th Century. Students explore such themes as modernity, primitivism, and utopian theory as well as the stylistic developments and formal innovations of this period.

ARTH 550 - Independent Study 1-4 hours. Designed for graduate students to work with Art History faculty on an independent study basis. A written Plan of Study is required.

ARTH 551 - In, of, and around Contemporary Craft 4 hours. This course investigates the nature and place of craft in modern culture. We traverse a century of craft-based practices--from the artisan guilds of the Arts and Crafts Movement to the virtual guilds of today--focusing on recent strategies and practices.

ARTH 552 - Contemporary Projects in Art 4 hours. This interactive course will focus on and study the projects of selected contemporary artists. These projects will serve as platforms for investigating issues and problems related to various contemporary art forms and movements including, the embodiment of the viewer, play and reality, new technologies and consciousness, ironic modernism, and the critique of the post-medium condition.

ARTH 553 - Art as Industry 4 hours. What is at stake in calling art "work"? Where does craftsmanship end and ordinary manufacture begin? Examining "industry" locally, students conduct research in large-scale facilities working in ceramic, glass, and metal to ponder the social conditions of production.

ARTH 554 - Recent Sculptural Practices 4 hours. A series of recent projects exploring contemporary issues in sculpture will be the focus of this class. We will be looking an international array of artists, including: Matthew Barney (United States),
Robert Irwin (United States), Juan Munoz (Spain), Doris Salcedo (Colombia), Thomas Schutte (Germany), and Rachel Whiteread (Britain). The work of these artists will be examined in the context of larger post-war debates.

ARTH 560 - Exploring Art History: Concepts, Methods and Practices 4 hours. This writing-intensive seminar introduces students to research methods in art history and to a range of approaches of historical and current significance. Students identify art historical problems, formulate hypotheses, conduct research, read critically, build arguments, and present reports.

ARTH 561 - Viewing Sculpture: Figurative, Modernist, Minimalist, Performative 4 hours. A close examination of the nature of sculptural viewing over the past 200 years. Sculptural theory is considered alongside contemporary artistic practice, ranging from Antonio Canova's neoclassical figures to Janet Cardiff's audio walks. Primary sources will be used for class discussion, along with Potts' "The Sculptural Imagination". In addition to thinking critically about the phenomenon of viewing, we will investigate the changing attitudes toward sculpture and the broadening definitions of three-dimensional work in the modern period.

ARTH 562 - History of Photography 4 hours. A survey course covering the pre-history of photography up to Post Modernism. Required readings directly related to the slide lectures are placed on reserve at Scholes Library.

ARTH 563 - Ceramics and Cultural Identity: Global Traditions and Innovations 4 hours. A thematic approach to the history of ceramics that is global and cross-disciplinary, designed for students to re-conceive their inheritance and its varied strands of tradition, convention and invention. Topics include ritual objects, tableware and dining customs and the funereal. Evidence will span an enormous range of cultures and era, from ancient to contemporary. The approach of material culture will reveal the complex cultural issues surround the ceramic medium.

ARTH 564 - Design and Culture 1600-1900: Tombstones to Telegraph Poles 4 hours. Trace chair, the coffee mug, and the printed page back in time to consider their significance in America between 1600 and 1900. Consulting primary documents, such as houses, furnishings, and photographs, and contemporary secondary readings, this course will examine the concepts, social meanings, styles, and craftsmanship of American material culture. Different theoretical models of interpretation will complement looking at stuff and learning about history. Our focus will be on local Southern Tier design, reconsidering the idea of style, diffusion, industry and the culture of the country.

ARTH 565 - Design & Culture, 1900-Present 4 hours. We will ponder design in the age of rapid obsolescence, and consider how typefaces, furniture, table settings, and facades reflect the changing values of our turbulent society. We will assess artifacts in terms of materials, craftsmanship, consumption, gender, authority, and cultural identity. Can a typeface engineer mass consumption? Can a chair articulate an existential crisis? Can a mug express emotional ambivalence? Theoretical and historical readings will be integral to this study of visual culture.

ARTH 582 - Women in Art 4 hours. This course considers various gender issues in art history including the role of women artists in western and non-western cultures, feminist re-evaluation of art history, and the existence of a "feminine art." Students are assigned research papers or oral reports on topics generated by readings, lectures, and class discussions.
Course Descriptions

ARTH 584 - Strategies of Display: Museums, Fairs, and Flea Markets 4 hours. Theorizing artistic reception has an added urgency in our era when presentation is the product. Artists need to constantly re-think their own practice in relation to new technologies, new ideas and the resurgence of old ideas. This course will look at how artists have addressed modes and technologies of presentation and how theories of the space of art have played a role in defining culture and cultural institutions. A critical appreciation of light, frames, and framing devices and other exhibition technologies will be surveyed in museums and malls, flea markets, and artist's homes.

ARTH 590 - Issues in Non-Western Art Seminar 4 hours. A round-table seminar based on extensive group discussions and in-depth individual research on non-Western art topics.

ARTH 593 - Art in the Age of Digital Recursion 4 hours. A round-table seminar based on extensive group discussions and in-depth research on recent innovations in technology and how that technology has impacted art production and theory.

ARTH 660 - First Year Graduate Seminar 2-4 hours. Required for all first year MFA graduate students. This seminar brings together the students working in all three graduate programs to facilitate their participation in creating a framework for understanding the practice of art making in relation to the contemporary, global and cultural terrain.

Biology

BIOL 580 - Research 2 or 4 hours. Open primarily to graduate students, others by permission.

Business Administration and Accounting

Foundation Courses (undergraduate credit only)

ACCT 211 - Financial Accounting 3 hours. This fundamental course introduces the student to the language of business. The basic theory and practice of financial accounting is studied including the balance sheet equation, the system of debits and credits, transaction analysis, adjusting entries, financial statement preparation, closing entries, income determination and the accounting for assets and liabilities. Prerequisite: Sophomore or higher class standing.

ACCT 212 - Managerial Accounting 3 hours. The second course of study of the fundamental principles of accounting has an emphasis on managerial accounting. The application of the accounting model on investments, long term liabilities and corporate stockholders' equity is studied. The course also introduces the student to the basics of managerial accounting information and the cost of goods manufactured, explains approaches to costing products and services and explains managerial accounting's use in decision making, planning and controlling the business. Prerequisite: ACCT 211.

BUSI 113 - Business Statistics 3 hours. The elements of basic statistical theory and technique are introduced with an emphasis on applications to business situations. Computer-based software packages complement these objectives.
ECON 201 - Principles of Microeconomics 4 hours. Introduction to the principles of microeconomics and a survey of contemporary economic issues. Includes study of market systems and structures, government regulation of business, labor markets and income distribution, strategic behavior, and market failure. Prerequisite: sophomore standing. (E)

ECON 202 - Principles of Macroeconomics 3 hours. Study of the factors involved in the problems of unemployment, inflation, economic growth, and the role of fiscal and monetary policies. Includes coverage of the money and banking system and international trade.

FIN 348 - Managerial Finance 3 hours. An introductory course explaining the tools and the new responsibilities modern financial managers deal with in a rapidly changing world environment characterized by uncertainty. The course identifies and examines the financing needs of the firm, its cost of capital, and assets and liabilities management using modern decision support systems for the application of new financial innovations, such as contingent claims and securitization of assets. Prerequisites: ACCT 211/212, ECON 201/202.

MGMT 328 - Management and Organizational Behavior 3 hours. This course builds an understanding of individual and group behavior within organizations, the means of assessing such organizational behavior and specific techniques for managing behavior toward improved performance. The goal for the course is for students to develop skills grounded in behavioral science that are essential for assuming a leadership position in organizational environments. Prerequisite: Junior standing.

MGMT 484 - Operations Management 3 hours. Introduces students to functions, problems, and techniques associated with management of production operations in manufacturing firms and service organizations. The problem oriented approach focuses on analytical techniques so students learn to recognize problems arising in operations management areas and to apply analytic techniques meaningfully. Topics include plant location, plant layout and design, inventory control, quality control, production planning and control (including PERT), production scheduling, queuing, mathematical programming, simulation, and forecasting. Prerequisites: BUSI 113, BUSI 261, ACCT 212, MGMT 328.

MKTG 221 - Marketing Principles and Management 3 hours. A survey of marketing concepts, principles, techniques and theories. Emphasizes the development and implementation of an effective marketing strategy, and control of the marketing function within the firm. The role of marketing in society and the efficient distribution of goods and services are addressed. Prerequisite: Sophomore standing.

Graduate Courses

MBA 600 - Seminar in Business Issues 3 hours. A seminar that focuses on special topics in the field of management and business administration. Topics vary from one semester to another. May be repeated for credit.

MBA 610 - Leadership Dynamics 3 hours. The course focuses on the theory and practice of situational leadership. Course participants will learn about theories of motivation, organization design and performance management by examining factors that influence individual and group performance management. Teaching methods will include the use of the School’s behavioral lab facilities, interactive software,
diagnostic tests to evaluate each participant's leadership skills, experiential exercises and group discussions.

**MBA 611 - Accounting Information Systems** 3 hours. This course provides students with a solid understanding of conceptual, analytical and technical knowledge and skills in accounting information systems to prepare students for successful careers in accounting. The course examines the design, control and operation of accounting information systems in a computerized organizational environment with a strong business process orientation. Various principles, methodologies and applications in accounting and information systems are introduced through lectures, discussions, case studies, computer lab assignments/project using advanced data modeling and enterprise applications including SAP.

**MBA 613 - International Marketing** 3 hours. This course introduces and discusses the critical factors influencing marketing management in a global environment related to analytic/strategic decisions and personal skills. Analyzing environmental and cultural information in a foreign country and managing with a global mindset are critical factors to assure success. Current examples and case studies address the key issues that marketers must keep in mind to create effective marketing programs for foreign markets. The relationships of international marketing to advertising, global competition, cultural and ethical concerns, theory vs. practice, emerging technologies, verbal and visual language and other relevant issues are also examined. The class is operated as a seminar requiring each class member's contribution in reading assigned material and active participation in class discussion including one group project.

**MBA 614 - Corporate Finance** 3 hours. This course deals with the financial manager's job to add value and maximize shareholders' wealth. Students develop their skills to learn and apply theories of finance related to capital budgeting techniques, capital structure working capital management, and international corporate finance through critical problem solving, cases, and a multiple period simulation of a hypothesized corporation. Students make major operating and financial decisions and sharpen their skills to integrate this course with other disciplines. This includes general decision-making for both short-term liquidity needs and long-term financing and investing projects to sustain the corporation growth and attain its overall objective of value creation to the stakeholders.

**MBA 621 - Business Decision Making** 3 hours. This course challenges students to integrate all of the discipline-specific skills developed in the MBA foundation courses within a dynamic decision-making context. The focus of the course is the process of problem framing/identification, analysis, and decision making in complex and uncertain environments. Working in a simulated environment, students develop critical judgments about the efficient and effective application of core knowledge by applying the tools of analysis appropriately, and then exacting useful insights and drawing managerially relevant recommendations from the analysis.

**MBA 622 - Quality Management** 3 hours. The focus of this course is the fundamental concept of quality management; the design and development of management systems which contribute to achieving customer-driven, continuous improvement. The course is interdisciplinary in nature, drawing principally from the fields of MIS, market research, management theory and statistical control. The course utilizes a mix of case studies, lectures, and homework assignments in developing an appreciation of the theory and practice of quality management.
including Six Sigma Management. Emphasis is on developing skills with specific
techniques and systems central to quality management principles.

MBA 624 - Strategic Management 3 hours. The course is case-oriented and focuses on the analysis of complex business problems via the integration of the subject matter of all previous program courses. Linking the firm's internal and external environments from the total-enterprise perspective of the general manager, this course undertakes a systematic inquiry into the strategic management and administrative business policy issues pertaining to the organization's performance and effectiveness. The course consists of four major topics: Business Planning Simulation (BPS), Business Information Collection (BIC), Corporate Performance (CPM) and Stakeholder Relationship Management (SRM). Enterprise Resource Planning (ERP) software will be used to demonstrate the importance of an enterprise-wide data base in strategic decision making.

MBA 640 - American Economic History 3 hours. In order to understand business as it is conducted in the new millennium, it is necessary to understand how business was conducted in the past. The readings in this course will focus on the "Golden Age of Business" in the United States beginning from the aftermath of the Civil War until the Great Depression.

MBA 650 - Independent Study 1-4 hours.

MBA 651 - Economic Analysis 3 hours. This course is designed to familiarize students with the role of markets in decisions facing individuals and firms. It will cover the theory and application of supply and demand, competitive and noncompetitive markets, production, cost, and strategic behavior of firms. Students will learn a set of concepts and analytical tools that will allow them to analyze a wide variety of economic and business questions.

MBA 653 - Accounting Theory 3 hours. This course places emphasis on the development of accounting theory and its conceptual framework as well as the financial statements, long term assets, long term liabilities and International Financial Reporting Standards. It covers accounting research methodology and theories of the uses of accounting information. The course gives students interested in the CPA FAR examination an overview of major content.

MBA 655 - Topics in Advanced Auditing 3 hours. This course places emphasis on the audit decision making process and the interrelationships among the many audit decisions involved in audit planning, audit testing, and the formation of the auditor's opinion. This course gives students interested in the CPA AUD examination an overview of major content.

MBA 657 - Advanced Taxation 3 hours. This course emphasizes a tax planning and decision making approach, with a focus on recognizing the role taxes play in business decisions. The course addresses the tax practice environment, the determination of gross income, employee compensation, business expenses, property acquisition, disposition and cost recovery deductions and tax-deferred exchanges. The course also focuses on the taxation of corporations, sole proprietorships and flow through entities as well as the taxation of individuals and wealth transfer issues.
Ceramic Engineering, Materials Science and Engineering, Glass Science, Biomaterials Engineering

Graduate students may take this 400-level course for graduate credit:

CEMS 458 - Materials for Electronic Packaging 3 hours
Electronic package systems for information processing include the function of electrical interconnection, cooling and physical support for the sets of semiconductor I.C. chips plus other components in electronic systems. Semiconductors, ceramics, polymers and metals are generally used in combinations in all packages; and, hence, it is necessary to understand their bulk properties as well as their interface structures and characteristics. This course focuses on the design of materials and processing needs for packaging technology from chip to board using principles involved in key areas of materials science and engineering disciplines. Basic properties and processing methods used in the design and fabrication of semiconductor IC's, ceramic substrates, metal interconnections, and polymers are discussed.
Prerequisites: CEMS 314, 344.

Graduate Courses:

CEMS 500 - Special Topics 2-4 hours. The course covers advanced topics which are not ordinarily covered in detail in the general curriculum, but are either current areas of faculty research or areas of current or future industrial interest.

CEMS 501 - Solid State Physics 3 hours. This course discusses the microscopic origins of the physical properties of solids. The focus is on the atomic lattice and associated mechanical, thermal and dielectric properties; energy band structure; the electronic properties of metals, semiconductors and insulators; magnetic properties; optical properties; superconductivity; and the dielectric, ferroelectric and piezoelectric properties of insulators.

CEMS 502 - Quantum Mechanics I 3 hours. Presents the fundamental theory of physical phenomena, of matter and energy and of their interaction. Emphasis is placed upon a thorough grounding in the concepts and techniques, which is then applied to diverse phenomena of importance to ceramics and to solid-state chemical physics.

CEMS 503 - Thermodynamics of Materials 3 hours. This course seeks to advance the students' understanding of classical and statistical thermodynamics as applied to materials systems as well as to expand students' ability to solve advanced thermodynamic problems. This course will cover classical and statistical thermodynamics as related to solution theory, phase equilibria, phase transformations, surface thermodynamics, and defects.

CEMS 504 - Kinetics and Non-equilibrium Processes in Material 3 hours. This course seeks to provide students with an advanced understanding of kinetics and non-equilibrium processes in materials. Topics will include the phenomenological and atomic theory of diffusion, kinetics of solid-state reactions, and diffusional and diffusionless phase transformations. Applications of the course materials to materials research problems will also be discussed.

CEMS 505 - Defects and Defect-related Processes 3 hours. This course discusses the nature and behavior of defects (including point, line and planar, etc.) in ceramics. The relationship of defect properties to such basic processes as mass transport diffusion and conductivity is considered. The discussion will largely be at an atomistic level and will cover non-stoichiometry, and the role of impurities in phenomena such as grain-growth and sintering.
CEMS 506 - Advanced Engineering Mathematics 3 hours. The classical partial differential equations of physics; the heat equation; the wave equation (vibrating strings and membranes); Laplace's equation. Includes orthogonal sets of functions, Fourier series, separation of variables, Sturm-Liouville problems boundary value problems and the Fourier integral.

CEMS 507 - Quantum Mechanics II 3 hours. Continuation of Quantum Mechanics I. Focuses on the applications of quantum mechanics postulates to real systems. Time independent perturbation theory is developed as are nonperturbative techniques such as variational theory. These ideas are applied to real atoms, molecules, metals, etc. Time dependent perturbation is also constructed and applied to electrodynamics. Non relativistic quantum electrodynamics is then applied to realistic systems. Prerequisite: CEMS 502.

CEMS 510 - Advanced Ceramic Processing 3 hours. This course provides a review of all relevant issues concerning the processing and sintering of advanced ceramic materials - discussing powder preparation and characterization, colloidal and sol-gel techniques, powder consolidation and forming, sintering theory and practice, and microstructure evolution. The course shows the importance of each step, and the critical interconnections among the steps, in the overall fabrication of ceramics; focuses on the formation of ceramics by firing consolidated powders; reveals which ceramic manufacturing methods are easier to employ and why; covers the properties of colloidal suspension; elucidates the liquid-phase sintering and vitrification; describes the role of solid solution additives in the sintering of ceramics; considers the densification of amorphous materials that can crystallize during firing; and more.

CEMS 511 - Science of Whitewares 3 hours. The science and technology of whitewares (i.e. primarily stonewares and porcelains) covering mineralogy, raw material characterization, mixing, rheology and plasticity, forming processes, drying, firing, phase equilibria, thermal stress evolution, microstructural characterization, physical properties, and glazing. Special emphasis will be given to colloidal science and its application to clay materials, the impact of particle-particle interactions on suspension rheology, plasticity, and particle packing, and to the application of phase equilibria to the microstructural evolution in whiteware bodies.

CEMS 512 - Colloids and Interfaces 3 hours. This course will develop a fundamental understanding in several areas of colloidal and interfacial chemistry that are important in the modern processing of fine ceramics, adsorption from solution, wetting, dispersion and stability of suspensions, sedimentation, osmosis effects, rheology, light scattering, emulsions, and gels, and how those principles apply to modern ceramic processing.

CEMS 513 - Nano-Structured Materials 3 hours. This course provides a basic knowledge of nano-structured materials. The first section deals with fundamentals of the synthesis processes, e.g. gas phase reactions or precipitation reactions. In the second section the various applications and properties of nano-structured materials will be discussed. Examples are quantum dot (lasers), ductile ceramics, solar cells, memory devices, or magnetic refrigeration.

CEMS 519 - Ceramic Science for the Artist 2 hours. The science and technology of whitewares covering mineralogy, raw material characterization, mixing, suspension behavior and control, rheology and plasticity, forming processes, drying, firing, the use of phase diagrams, thermal stress and microstructural evolution,
Course Descriptions

mechanical properties, and glazing. This course provides the artist with the practical basis necessary for analyzing problems commonly encountered in the production of whitewares.

CEMS 520 - Optical Materials 3 hours. A comprehensive course on optical materials. The focus is on foundations of linear optics leading to detailed exploration of electronic and vibrational processes in materials. Different families of optical materials (glasses, ceramics, and semiconductors) and their processing are discussed. Applications of these materials are emphasized. Non-linear optical concepts are also introduced.

CEMS 526 - Surface Properties of Glass 3 hours. The theoretical background necessary for the understanding, prediction and modification of surface properties is provided. Non-crystalline materials are stressed. The course includes use of thermodynamic principles to predict the general chemical and mechanical behavior of glass under a wide variety of environments. Mathematical models provide quantitative descriptions of the performance of these materials in various applications. Individual topics include chemical durability, mechanical properties including environmental effects, friction, wear, grinding and polishing, and surface modification processes such as ion-exchange and de-alkalization processes.

CEMS 530 - Advanced Properties 3 hours. Physical and mathematic presentation of material properties and their relation to the symmetry of crystals, ceramics, glasses, and isotropic materials. Presentation of properties in both matrix and tensor forms. Properties include linear and non-linear equilibrium properties (e.g., permittivity, stiffness, permeability, piezoelectricity, electro-optic and magneto-optic) and transport properties (e.g., diffusivity, electrical conductivity). Inter-relationship of properties using Maxwell Relations and thermodynamics.

CEMS 531 - Advanced Solid State Chemistry 3 hours. This course will explore, in detail, the relationship between structure, stoichiometry, and properties of solid materials. The subject will be approached through a thorough discussion of symmetry (both point and space groups) and crystal chemistry.

CEMS 532 - Atomistic Computer Modeling of Materials 3 hours.

CEMS 536 - Physical and Mechanical Metallurgy 3 hours. Structure/processing/property relationships for metals with an emphasis on mechanical properties. Mechanical testing techniques and the effect of test temperature and strain rate on properties. Failure analysis, corrosion, fracture, fatigue, and creep. Brief introduction to the physical metallurgy of aluminum, titanium, magnesium and stainless steel alloys. Laboratory experiments emphasizing mechanical testing, heat treatment, and microstructural development.

CEMS 538 - Material Surfaces and Thin Films 3 hours. This course focuses on the fundamental structure/properties, related processes, and characterization of material surfaces and thin films. Surface structure and processes will then be applied to examine practical aspects of thin film deposition, functionality, and characterization.

CEMS 540 - Laser Processing of Materials 3 hours. This course introduces students to basic principles of laser processing technology. The application of the laser for processing materials and three-dimensional devices is discussed, including laser material interactions, laser-assisted film deposition, and laser micro- and nano-manufacturing.
CEMS 544 - Structure and Characterization of Glasses 3 hours. This course provides a general review of techniques for the characterization of glasses and glass-ceramics. Characterization is taken to include atomic and molecular composition and distribution (intrinsic and extrinsic species), morphology, phase (vitreous and crystalline) identity and concentration, thermal history, and properties which are commonly used to establish reproducibility of glass compositions. Techniques considered will include microscopy, x-ray analysis, spectroscopy, qualitative and quantitative chemical analysis, thermal analysis, surface analysis and profiling, and property measurements. Discussions include the principles behind each measurement, the equipment used, and the possible sources of error. Both qualitative and quantitative analysis are included wherever applicable.

CEMS 545 - Characterization in Materials Science and Engineering 3 hours. The course will provide the student with detailed knowledge of the interactions of electromagnetic radiation with matter. Particle probes used in materials characterization will also be considered. A theoretical approach to understanding the mechanisms of interaction will provide the foundation for understanding any of the plethora of materials characterization techniques, including capabilities and limitations.

CEMS 547 - Science and Technology of Magnetic Ceramics 3 hours. This course provides a basic knowledge of magnetic ceramic materials. The first section deals with fundamentals of magnetism, magnetic properties (intrinsic and structure-sensitive) and crystallography of ferrites both hard and soft types. In the second section, the technology of ferrites is described in terms of raw materials, conventional vs. non-conventional techniques of processing, sintering, microstructure control, effect of additives, and applications.

CEMS 550 - Independent Study 1-4 hours.

CEMS 553 - Mechanical Properties of Glasses and Ceramics 3 hours. Fundamental concepts concerning mechanical behavior are introduced and discussed with respect to their application to glasses and ceramics. Emphasis is placed on strength and fracture mechanics, and how processing and temperature affect mechanical properties. Testing procedures, including non-destructive evaluation techniques, and problems associated with them are treated in detail. Part of the semester is devoted to a discussion of recent developments in the area of mechanical properties.

CEMS 562 - Immunology 4 hours. During this course you will learn what makes up the immune system, and how it works in keeping us healthy. We'll also take a look at some of the more complex issues surrounding the immune system such as vaccination, autoimmune disease and transplantation. Upon completion of the course you will be able to name and describe the cells and organs of the immune system, and understand the function of each. You will also be able to describe the normal processes of immunity, and regulatory controls, explain the results of immune component deficiencies and understand how normal immune function can cause disease.

CEMS 564 - Biochemistry: Proteins and Metabolism 4 hours. Properties, biosynthetic pathways, and metabolism of carbohydrates, lipids, and nitrogenous compounds with related units on physical biochemistry, protein structure, bioenergetics and enzyme kinetics. Laboratories reinforce theoretical concepts and provide hands-on experience with modern biochemistry techniques and instrumentation. Three lectures and one three-hour laboratory.
Course Descriptions

CEMS 565 - Biochemistry: Nucleic Acids 4 hours. This course surveys the molecular biology of the gene. Discussions of the latest paradigms for nucleic acid structure and function are presented. Topics include: regulation of DNA replication and transcription, post-transcriptional modification of RNA, chromatin structure, recombinant DNA techniques, functional genomics, and the latest genetic engineering methods. Four lectures with one reserved for discussion of current research publications.

CEMS 566 - Skeletal Tissue 3 hours. The skeleton contains 206 bones that provide strength and rigidity yet allow flexibility. However, bone can fail as a result of both disease and insult. In this course we study the hierarchical structure of bone, how disease affects it and, subsequently, its repair both medically and surgically. Offered every year.

CEMS 568 - Biomedical Materials 3 hours. This course introduces the fundamental concepts and theories behind the choice of material for biological applications. Metals, polymers, ceramics and composites are covered. It brings together biology and materials science to get a better understanding of fundamental interactions that control the applicability of materials. Case studies of present material applications are used to illustrate the principles taught.

CEMS 575 - Biocompatibility 3 hours. This course focuses on the application of materials to restoring human anatomy which has been compromised due to disease or trauma. This lecture series looks at how synthetic and natural materials restore body function and how they interact with host tissues, including materials science, surface interactions, and medical procedures.

CEMS 680 - Graduate Thesis 2-15 hours.

CEMS 685 - Graduate Internship 1-4 hours. Off-site internships with industrial, government or academic research laboratories are required for a minimum of 2 months. Funding will be provided by either the collaborating institution or the School. Examples of current contacts include Affymetrix, Arrow International, Cambridge Scientific, Food and Drug Administration, Orthovita, Owens Corning Fiberglass, U.S. Biomaterials, U.S. Surgical, Wilson Greatbatch, and Zimmer. We also have strong ties with international universities and companies; for example, we currently have internships available at the University of Modena in Italy.

Chemistry

Graduate students may take these 400-level courses for graduate credit:

CHEM 400 - Advanced Chemistry Topics 1-4 hours. Special topics not covered by regular course work. All special topics courses must have the written approval of the Division Chair and should in general meet the criteria of the American Chemical Society's requirements for an advanced course. Prerequisite: CHEM 346, although this can be waived at the discretion of the Division Chair.

CHEM 423 - Instrumental Analysis 3 hours. The theory and practice of modern instrumentation techniques and methods used in chemistry are presented. An in-depth look at spectroscopic, separation, and electrochemical methods and their associated instrumentation follow an introduction to instrumentation; interpretation of results is also covered. Required for chemistry majors. Prerequisites: CHEM 321 and CHEM 346 or equivalent.
CHEM 457 - Advanced Organic Chemistry 2 hours. Organic reaction mechanisms and stereochemistry. Other topics may be included, depending upon the interests of those enrolled. Prerequisite: CHEM 316 (Alternate years)

CHEM 461 - Advanced Chemistry Laboratory I 2 hours. A laboratory course integrating synthesis, purification, analysis, and characterization of chemical species. Synthetic work includes use of controlled atmospheres, high temperatures and non-aqueous systems. Purification of compounds is by distillation and recrystallization, as well as by various chromatographic techniques. Analysis and characterization include both wet chemical and instrumental techniques. Co-requirement: CHEM 423. Prerequisites: CHEM 321 and CHEM 346 or equivalent.

Counseling

COUN 600 - Special Topics in Counseling 1-3 hours.

COUN 601 - Foundations of Cultural Diversity 1 hour. As frontline practitioners in schools, human service agencies, and higher education settings, mental health providers are faced with a proliferation of cultural issues on a daily basis. It is essential that mental health providers develop an appreciation for cultural diversity and an understanding of how cultural diversity issues interact with service provision. This course is intended as an introduction to cultural diversity issues and their impact on the major areas of practice within schools, agencies, and higher education. Upon completion of this course, students will have acquired knowledge regarding cultural issues that provide a foundation for exploring these issues in subsequent specialization courses. (Cross-listed as PSYC 601)

COUN 602 - The Professional and Ethical Foundations of Counseling 3 hours. This course helps students develop their professional identity and understand ethical behavior as counselors. Areas explored include professional roles, settings, functions, goals and objectives, organizations, history, ethics, and credentialing.

COUN 603 - Foundations of Mental Health Counseling 3 hours. This course is designed to familiarize students with the roles and functions of mental health counselors in the contemporary mental health system. Students learn about the history and organization of mental health services, models of service delivery, multicultural factors, systemic issues, advocacy for the mentally ill, legal and ethical guidelines, and issues related to diagnosis and treatment, as well as learning basic interview skills.

COUN 604 - Foundations in School Counseling 3 hours. This course focuses on current guidance and counseling issues that are important to beginning school counselors. Examples of such issues include the CSE and IEP planning, course scheduling, working with BOCES, and managing time constraints. Prerequisite: COUN 602 and 636.

COUN 605 - Career Development and Life Planning 3 hours. Students learn how career development theories, occupational and educational information, vocational tests, sociological and economic factors, and family dynamics all relate in helping their clients to make career and life style career decisions. Students also spend time practicing skills directly related to career counseling. Prerequisite: COUN 602 and 636. Lab fee required.
Course Descriptions

COUN 606 - Human Development: The Lifespan 3 hours. This course acquaints the student with the interplay of psychodynamics, behavioral, sociocultural, cognitive and interpersonal theories of development. These factors are examined as they combine to explain personality and cognitive functioning across the life span. The student will learn to relate development theory and research to professional practice in educational and clinical settings.

COUN 615 - Psychopathology and Differential Diagnosis 3 hours. This course is designed to familiarize students with the DSM-IV-TR axial system, and with etiology and general treatment issues for various psychological disorders. Students learn differential criteria for diagnosis, multicultural factors, systemic issues, legal and ethical concerns, intake and information gathering skills, and basic psychopharmacological information pertinent to mental health diagnosis and treatment. The course is focused on disorders that present with frequency to mental health counselors, including: mood disorders, anxiety disorders, substance use disorders, and impulse control disorders.

COUN 616 - Mental Health, Exceptionality, and Disability 3 hours. This course covers the range of physical, cognitive, communication, and social/emotional exceptionalities in human development from childhood to early adulthood. One focus will be on understanding mental health and psychopathology from the perspectives of risk and resilience. A second focus is on understanding the commonalities, not just the differences, between children and youth with disabilities and their non-disabled peers.

COUN 617 - Exceptionality: College Students with Disabilities 3 hours. This course will focus on effective service provision for college students with disabilities. Topics will include the Americans with Disabilities Act, identification of and intervention with various disabilities, development of systems of support, and faculty consultation. Prerequisites: COUN 602, 606, and 636.

COUN 619 - Program Development and Grantsmanship 3 hours. This course will introduce students to fundamentals of program development and grantsmanship in the counseling field. Emphasis will be on techniques of successful proposal writing, funding opportunities at the local/state/federal level, grant administration, and building programs through collaborative teams of faculty, students, and school and agency personnel.

COUN 626 - Assessment in Counseling 3 hours. This course teaches students how to effectively evaluate the usefulness of tests and inventories and how to integrate testing into the counseling process. Such measurement issues as reliability, validity, and standard error of measurement are covered. Students also become familiar with the most frequently used personality, educational, clinical, intelligence and special population instruments, as well as testing ethics. Time is spent practicing test interpretation with other students. Lab fee required.

COUN 628 - Assessment in Mental Health Counseling 3 hours. The focus of this course is the administration, interpretation and reporting of assessment instruments commonly used in mental health settings. Instruments covered include omnibus rating scales, standardized personality scales, anxiety scales, and ADHD scales. Use of scales to provide data for psychiatric diagnosis is emphasized. Lab fee required.

COUN 636 - Principles of Counseling 3 hours. This course focuses on teaching students the process and theories of counseling. Students also spend time practicing skills directly related to the helping process.
COUN 637 - Introduction to Group Dynamics 1 hour. The focus is on developing an understanding of the group process and its evolution, including basic group concepts and their applications. Students are involved in the process as they experience and then conceptualize group processes. An integral part of the experience is the student's engagement in self-examination. (Cross-listed as PSYC 637)

COUN 638 - Advanced Counseling Theory and Practice 3 hours. This course emphasizes the integration, by the student, of counseling theory and counseling practice. The aim is an expansion of both knowledge and skill. Counseling theories will be studied in light of their applicability to skill development. Prerequisite: COUN 636.

COUN 639 - Group Counseling 3 hours. This course emphasizes the understandings and skills necessary to plan, organize, lead, and evaluate counseling groups. Attention is given to recent research and current issues related to groups in the helping professions. Students need access to counseling groups at the time of the course.

COUN 641 - Counseling Special Populations 3 hours. This course addresses formulation and application of research-based effective interventions with particular presenting concerns that often present challenges to the mental health counselor. Some of these presenting concerns include: bereavement, bipolar disorder, schizophrenia spectrum disorders, eating disorders, sex offenders, personality disorders, and substance abuse. Students have the opportunity to discuss difficult cases they are currently seeing and develop individualized treatment plans with appropriate outcome benchmarks based on best practices guidelines.

COUN 642 - Multi-Cultural Counseling 3 hours. An exploration of the considerations and issues involved in counseling persons from different cultural, religious, racial-ethnic, and gender/gender oriented groups. There is a focus on heightening an awareness and appreciation of difference. Prerequisite: COUN/PSYC 601.

COUN 643 - Introduction to Play Therapy 3 hours. This course reviews the history of play therapy and introduces participants to major play therapy theories and approaches. Topics include child-centered play therapy, relationship therapy, developmental play therapy (including Theraplay), cognitive-behavioral play therapy, and filial therapy. Applications of play therapy to specific childhood issues and populations are also discussed.

COUN 644 - Techniques of Play Therapy 3 hours. This course is designed to introduce participants to practical techniques and models of play therapy. Topics covered include play media, designing the therapy room, and such play therapy models as non-directive, relationship, developmental-contextual therapies, and Theraplay. Students are expected to complete 50 hours of supervised experience in play therapy with child clients during the latter part of the course. Prerequisite: Graduate courses in counseling techniques and theories. (Cross-listed as PSYC 644)

COUN 646 - Consultation and Prevention 3 hours. This course covers the concepts and practice of consultation in educational and human service settings. Emphases are on mental health and behavioral consultation including child-centered, teacher-centered and system centered techniques. This course has a practicum component. Prerequisite: PSYC 638 or COUN 638. (Cross-listed as PSYC 646)
COUN 647 - Advanced Techniques and Assessment in Family Therapy 3 hours. This course covers family assessment approaches and special topics related to the use of family therapy, including special issues and techniques for dealing with families with adolescents, substance abusers, and elderly members. Students are required to complete a 50 clock-hour practicum experience as part of this course. Prerequisites: COUN 643 and COUN 644.

COUN 650 - Independent Study 1-3 hours.

COUN 651 - Introduction to Family Therapy 3 hours. This survey course provides an introduction to theories of family therapy and family development. A historical overview of the field is provided, as well as background in General Systems Theory, and the Unitization Approach of Milton Erickson. Research on family development and family therapy efficacy are also reviewed.

COUN 652 - Techniques of Family Therapy 3 hours. This course provides a practical introduction to family therapy techniques. Specifically, students are trained in concepts and techniques of structural-strategic family therapy through videotaped demonstrations and simulations. Students also have the opportunity to discuss actual cases as a means of applying family therapy concepts. At the completion of the course, participants should have developed foundation skills for using family therapy interventions.

COUN 653 - Topics in Play Therapy 3 hours. This course covers special topics related to the use of play therapy, such as activity groups, family play therapy, and play assessment techniques. Students are required to be involved in the 100 clock-hour practicum experience in play therapy during this course. Prerequisites: COUN 643 and COUN 644.

COUN 656 - Counseling Pre-Practicum 1 hour. This course will acclimate students to the environment in which the counseling experience occurs through a series of site visits (minimum of 5) to schools, mental health agencies, and/or colleges/universities. Interview summaries, detailed analyses, and other relevant counseling experiences are a part of the course. Continued orientation to the role of the professional counselor and ethical concerns will also be discussed. Students will practice the basics in terms of active listening skills and the use of appropriate counseling techniques through role-plays and other activities.

COUN 657 - Practicum in Counseling I 2 or 3 hours. The student is required to spend a minimum of 100 clock hours at a selected school, agency or college/university, working under supervision with clients/students. During that time, the student is expected to increase his or her competence in the areas of basic interviewing, assessment, and counseling skills. Furthermore, the student will be made more aware of the ethical, legal, and professional issues inherent in the counseling process. The student is provided practical, on-the-job, supervised and evaluated field experiences that provide the foundation for internship experiences. A weekly seminar class accompanies the fieldwork experience, which will focus on discussion of the theory and practice of supervision vis-a-vis the practicum. Prerequisite: COUN 656.

COUN 658 - Practicum in Counseling II 3 hours. This is a continuation of COUN 657, with the exception that the student is required to spend a minimum of 200 clock hours at a selected school, agency or college/university, working under supervision with clients/students. Students continue to develop conceptual and professional
skills related to their practice at a field site. Again, a weekly seminar class accompanies the fieldwork experience. Prerequisite: COUN 657.

COUN 659 - Practicum in Play Therapy 3 hours. The student experiences actual play therapy under the supervision of a counseling professional who is experienced in play therapy at a field-training site. The site may be a school, social service agency, mental health clinic, or any other approved counseling setting. The student is expected to spend the equivalent of 7 hours per week at the site (100 clock hours) providing play therapy to children, and participate in a regular supervision seminar. Prerequisites: COUN 651 and COUN 652.

COUN 660 - Special Practicum I 1-3 hours.

COUN 663 - Internship in Mental Health Counseling I 3-9 hours. The student experiences the actual counseling practice by performing a wide range of counselor functions and activities in a field-training site. The site may be a social service agency, mental health clinic, veterans counseling service, or any other approved counseling setting. Site supervision is provided by a licensed field supervisor. The student is expected to spend the equivalent of a minimum of 16 hours per week (300 clock hours) in addition to participating in a regular seminar. Students are required to continue on to COUN 664-Internship II. Prerequisites: COUN 603, 615, and 619; COUN 628 or 641 or 647.

COUN 664 - Internship in Mental Health Counseling II 3 hours. This is a continuation of COUN 663. Site supervision is provided by a licensed field supervisor. The student is expected to spend the equivalent of 16 hours per week (300 clock hours) at the site, in addition to participating in a regular seminar. Prerequisite; COUN 663.

COUN 665 - Practicum in Family Therapy 3 hours. The student experiences actual family therapy practice under the supervision of a counseling professional who is experienced in family therapy at a field-training site. The site may be a school, social service agency, mental health clinic, or any other approved counseling setting. The student is expected to spend the equivalent of 7 hours per week at the site (100 clock hours) providing family therapy to children, and participate in a regular supervision seminar. Prerequisites: COUN 651 and 652.

COUN 666 - Practicum in Mental Health Counseling 3 hours. The student is required to spend a minimum of 100 clock hours (40 direct contact hours) at a selected clinical mental health setting working under supervision with clients. The student is expected to increase his or her competence in the areas of basic interviewing, assessment, and counseling skills. Furthermore, the student is made aware of the ethical, legal, and professional issues inherent in the counseling process. A weekly seminar class accompanies the fieldwork experience, which focuses on discussion of the theory and practice of supervision vis-a-vis the practicum.

COUN 667 - Internship in Mental Health Counseling 3-9 hours. The student experiences the actual counseling practice by performing a wide range of counselor functions and activities in a field-training site. The site may be a social service agency, mental health clinic, veterans counseling service, or any other approved counseling setting. Site supervision is provided by a certified or licensed field supervisor. The student is expected to spend four full days each week at the site (400 clock hours), in addition to participating in a regular seminar on campus. Prerequisite: Satisfactory completion of qualifying examination.
Course Descriptions

COUN 668 - Internship in School Counseling I 3-6 hours. This is a continuation of COUN 657, with the exception that the student is required to spend a minimum of 200 clock hours at a selected school working with students under supervision. Students continue to develop conceptual and professional skills related to their practice at a field site. A weekly seminar class accompanies the fieldwork experience. Prerequisite: COUN 657.

COUN 670 - Internship in School Counseling II 3-12 hours. This is a continuation of COUN 668, with the exception that the student is required to spend a minimum of 300 to 400 clock hours at a selected school working under supervision. By the end of the internship, students will have completed 600 hours (240 direct contact hours). Students continue to develop conceptual and professional skills. A weekly seminar class accompanies the fieldwork experience. Prerequisite: COUN 668.

COUN 671 - Research and Statistics 3 hours. The course introduces the analysis of research design and basic statistics and gives the student the background necessary to read and judge professional evaluation research as well as the ability to design and implement basic program evaluation.

COUN 695 - Topics in Counseling/Internship Seminar 3 hours. This course covers advanced issues encountered in the counseling setting with an emphasis on current trends in the field. Intensive study of research and practice is based on applied issues that arise for the professional counselor.

Education

Graduate students may take these 400-level courses for graduate credit:

EDUC 460 - Seminar in Teaching and Professional Development 3 hours. Taken concurrently with EDUC 462 and EDUC 463, this course addresses general issues of professional development of educators. Topics include, but are not limited to classroom management, teaching learning process, and issues of professionalism.

EDUC 471 - Methods of Teaching Literacy 6 hours. This course involves a study of the planning and implementation of literacy instruction birth-grade 6. The big ideas of early literacy; phonemic awareness, alphabetic principle, fluency, vocabulary and comprehension instruction for all students, including those with special needs, will be covered. Prerequisite: Admission into the Early Childhood/Childhood Education Program.

EDUC 472 - Competency Skills in Teaching Literacy 3 hours. This course gives students an opportunity to demonstrate achieved competency skills for teaching literacy at the Early Childhood/Childhood level. Attention will be given to the current New York State Learning Standards and how to incorporate these standards into the curriculum. Prerequisite: EDUC 471 and admission into Student Teaching in Early Childhood/Childhood Education.

EDUC 473 - Assessment in the Early Childhood/Childhood Classroom 3 hours. This course examines assessment procedures, strategies, and techniques used and constructed for early childhood/childhood classroom teaching and learning purposes. Traditional and nontraditional means of assessment will be explored and an emphasis is placed on the alignment of assessment, instruction and content.
EDUC 489 - Current Teaching Methods: Adolescent Subjects 3 hours. Discussion of goals, methods, and materials used to successfully teach middle/adolescence and special subjects. Prerequisites: EDUC 230 and EDUC 231, declaration of minor in education.

Graduate Courses:
EDUC 500 - Special Topics in Education 3 hours.

EDUC 503 - Competency in the Teaching of Literacy 3 hours. Study of theories of literacy development and strategies appropriate to teaching literacy in the early childhood and childhood classroom. Topics covered include strategies for teaching emergent literacy, word identification, phonics, phonemic awareness, meaning, comprehension, instructional materials, and identifying instructional needs.

EDUC 504 - Diagnostic and Remedial Techniques in Literacy 3 hours. Provides students with in-depth knowledge of procedures for assessing specific literacy problems, and strategies for the correction of reading difficulties of students within a broad range of disabilities. At the conclusion of this course, teachers should be able to administer and interpret several diagnostic instruments and communicate these results to parents and be able to design literacy programs at all areas of literacy at the early childhood and childhood levels. Pre- or co-requisite: EDUC 503. Field component required.

EDUC 505 - Literacy in the Content Areas 3 hours. The emphasis is on the application of literacy to subject area learning. It takes a balanced approach, providing a realistic and practical treatment of literacy as related to text review. Literacy strategies in content areas and study techniques are examined.

EDUC 507 - Literacy Seminar and Field Experience 6 hours. Emphasis is placed on the selection of literacy materials, grouping practices and literacy strategies for small and large groups in a public school setting. This experience coordinates the literacy curriculum with various school personnel and stresses the development of parental programs at the early childhood and childhood levels.

EDUC 513 - Literature for Children 3 hours. A practical approach to the study and selection of children's books. The riches of classical and contemporary writings are overviewed for classroom use. Various approaches to working with children and books are introduced as well as how literature can be integrated into the early childhood curriculum.

EDUC 541 - Current Issues in Education 3 hours. This course explores various educational philosophies, as well as contemporary issues. It is helpful to early childhood and childhood as well as middle and adolescent school teachers. Project SAVE Workshop included.

EDUC 542 - The Teaching-Learning Process 3 hours. This course is an investigation of relationships between the teaching process and the principles of learning. The emphasis is on having the students expand their repertoire of instructional strategies and thus increase their own teaching effectiveness within the learning environment.

EDUC 550 - Independent Study 1-4 hours.
EDUC 572 - Teaching with Data: Functions and Statistics 3 hours. This course builds upon EDUC 571 and focuses on handling data. Society is awash with data found in tables and charts in newspapers, magazines, television, and especially through the internet. Handling data in the classroom will be demonstrated through modeling with functions and other basic statistical techniques. Examples from across the curriculum will make this course relevant for teachers of all disciplines and grade levels. Excel will be used as the principle technological tool.

EDUC 573 - Assessment and Learning Theories in Numeracy 3 hours. This course will focus on identification of individual student problems and difficulties with quantitative reasoning and communication; and on successful remediation strategies. These main objectives will broaden the teacher's perspectives about the philosophical and theoretical foundations of assessment and allow them to develop and implement alternative assessment methods related to student learning. A variety of learning theories will be explored on the current state of research in numeracy education, including gender and social influences on mathematical participation.

EDUC 574 - Doing Science: Materials in Society 3 hours. In this course students learn and apply key mathematical concepts as necessary and fundamental parts of science, life, and the course itself; through the use of materials science, a historic strength of Alfred University, as the science exemplar and basis. The bulk of the quantification content lies in the laboratory portion where various mathematical calculations and techniques are introduced and applied to quantify and understand the measured results and experiments. Mathematics in the form of ratios, exponential notation, fractions, percent, and unit conversions/use are also essential to the lectures. These mathematical components of the course strengthen the course goals: 1) To increase student understanding and awareness of science in their lives. 2) To provide a positive science experience to reduce pre-existing aversions. 3) To understand the systematic and logical progression that under girds all science. 4) To develop an appreciation that science should be understandable to everyone and that it must be quantitative and repeatable to be science.

EDUC 588 - Teaching in the Adolescent Classroom 3 hours. This course reviews human development during adolescence with an emphasis on families, schools and the cultural contexts of adolescent development. Building upon this understanding, students will explore in depth the curriculum and instruction of the adolescent learner. Discussion of goals, methods, and materials used to successfully teach adolescent level courses.

EDUC 593 - Use of Technology in the Inclusive Classroom 3 hours. This course provides teachers with the skills and techniques to integrate new teaching and learning strategies, technologies, and assessment procedures into the classroom curriculum. This course will focus on using technology to foster higher level learning outcomes for students with and without disabilities to meet the New York State Learning Standards.

EDUC 695 - Master's Research 3 hours. Designed to be a culminating project for those who have completed the majority of coursework in the program. May be designed with special research or practical orientation.

Special Education

SPED 500 - Topics in Special Education 3 hours.
SPED 507 - Special Education Seminar and Field Experience 6 hours. This 100 hour field experience involves understanding the characteristics of children with disabilities and the instructional strategies and methods used to facilitate their learning process. The field experience is completed at the developmental levels of certification sought. Graduate Program Portfolio required. Prerequisites: SPED 545, 556, 558. (Meets NYSED Field Experience in SWD requirement.)

SPED 540 - Multimodal Literacy in the Inclusive Classroom 3 hours. This course examines an expanded definition of "text" to include multimedia and visual texts. Using formal and informal assessment tools and assistive technology, methods of teaching literacy skills to SWD across content areas is taught. (Meets NYSED Special Education Curriculum and Instruction requirements.)

SPED 545 - Teaching Students with Learning Disabilities 3 hours. This course involves a study of a range of learning disabilities. Historical, philosophical and legal foundations provide context for the examination of specific instructional strategies linked to the learning processes of students with learning disabilities. (Meets NYSED Special Education Foundations & Curriculum and Instruction requirements.)

SPED 550 - Independent Study 1-4 hours.

SPED 556 - Teaching Students with Disabilities in Inclusive Classrooms 3 hours. This course involves understanding the characteristics of the range of disabilities, and specific instructional strategies and methods linked to learning processes and human development. Historical, philosophical, legal, cultural and ethical foundations of educating students with disabilities are examined. (Meets NYSED Special Education Foundations & Curriculum and Instruction requirements.)

SPED 558 - Managing Students with Disabilities in an Inclusive Classroom 3 hours. This course involves understanding the effects of classroom environment on student behavior and the development of positive behavioral supports including problem solving and conflict resolution strategies. Assignments include behavioral observation, assessment and intervention. (Meets NYSED Special Education Managing the Classroom requirement.)

SPED 611 - Assessing and Evaluating SWD 3 hours. This course focuses on the process of identifying, assessing and diagnosing students with disabilities, including selecting, administering and analyzing test data to develop individualized educational plans (IEP's). Prerequisites: SPED 545, 556, 558. (Meets NYSED Assessment requirement.)

Electrical Engineering

ELEC 500 - Topics in Electrical Engineering 2-4 hours. Special topics in electrical engineering which vary from year to year.

ELEC 510 - Computer Architecture 3 hours. This course introduces the fundamentals of the modern processor design through qualitative and quantitative analysis. Both hardware and software design aspects are discussed. The main topics include economics of scaling, pipelining, memory segmentation and performance, instruction set design, and performance optimization. The course includes a design project, implemented in VHDL, which utilizes the topics discussed in class.
ELEC 531 - Wind Energy 3 hours. The primary objective of this course is to gain an elementary familiarity with wind energy. After a brief review of power and energy, wind energy is introduced. Topics of discussion include history and evolution of wind energy technology, power in the wind, wind turbines, components and operation of typical wind systems, small scale hybrid energy systems, markets, demand, and resources. The course also includes a class project.

ELEC 532 - Solar Energy Systems 3 hours. In this course we study solar radiation, theory of light, topics of heat transfer associated with solar energy, radiation characteristics of materials, collectors, energy storage, solar loads and the economics. The physics of voltaic systems will also be discussed. This course includes a design project.

ELEC 540 - Networking I 3 hours. This course covers topics based on Cisco Networking Academy CCNA1 and CCNA2 Exploration courses. This includes the open systems interconnection (OSI) model, IP addressing and subnetting, Ethernet, the Cisco Eagle server, basic router configuration, static routing, and dynamic routing protocols RIP, EIGRP, and OSPF. Prerequisite: permission of instructor.

ELEC 542 - Applied Electromagnetism 3 hours. Complex vectors, Maxwell's equations, uniform plane waves, reflection and transmission of waves, waveguides and resonators, transmission lines, antennas, special topics in waves, electrostatic fields, electric force and energy, special techniques to solve electromagnetic equations, direct currents, magnetostatic fields, magnetic circuits, electroquasistatic fields, magnetoquasistatic fields, examples of applications.

ELEC 543 - Networking II 3 hours. This course covers topics based on Cisco Networking Academy CCNA3 and CCNA4 Exploration courses. This includes LAN switching, VLANs, inter-VLAN routing, basic wireless concept and configuration, wide area networks (WANs), PPP, frame relay, network security, and ACLs. Prerequisite: permission of instructor.

ELEC 544 - Optical Fiber Communication Systems 3 hours. Basic optical fiber communication components including optical fibers, optical transmitters, and optical receivers; basic concept of analog and digital signals, channel multiplexing, and modulation; geometrical-optics description, wave propagation, dispersion, and fiber loss; system design and performance.

ELEC 550 - Independent Study 1-4 hours.

ELEC 568 - Advanced Topics in Genetic Algorithms 3 hours. Genetic Algorithms, GA, is a collection of search and optimization techniques that function according to the evolutionary processes. Simple GA, classifier systems, GA with variable population size, and GA in machine learning context are introduced. Also, selected applications in optimization techniques and prediction methods are discussed. This course is a project-oriented course.

ELEC 574 - Electric Machinery 3 hours. Engineering electromagnetic theories, in particular magnetic theory and circuits, three phase circuits, electro-mechanics, electric energy to mechanical energy conversion, applications of phasors, transformers, motors, generators, power electronics devices and controls.

ELEC 586 - VLSI Design 3 hours. Design of VLSI circuits concentrating on CMOS technologies. Logic design, fabrication principles, CAD layout and introduction to VLSI systems architecture. Structured design emphasis will be with the concept of hierarchy. Design methodology will focus on design of VLSI subsystems using advanced hierarchical design tools including Verilog HDL. This will be in the form of class homework and short projects.

ELEC 588 - Applied Complex Variables 3 hours. Complex numbers, algebra, functions and integration. Taylor and Laurent series, theory of residues, conformal mapping and the Schwarz-Christoffel transformation. Applications to fluid dynamics, electrostatics, and electrical machines. Impulse functions. Applications to Fourier transforms and the inversion of the Laplace transform. Some linear algebra and matrix theory introduced as needed for an understanding of dynamic systems.

ELEC 680 - Graduate Thesis 2-15 hours.
ELEC 685 - Graduate Internship 1-4 hours.
ELEC 699 - Master's Project 3 hours.

Engineering

ENGR 500 - Special Topics in Engineering 2-4 hours. The course covers advanced topics which are not covered in detail in the general curriculum.

ENGR 501 - Sources of Renewable Energy 3 hours. The main objective of this course is to gain an elementary familiarity with renewable forms of energy. The course addresses three distinct areas: power and energy, generating power from renewable sources of energy, and the economics and markets of energy, in particular generation and distribution. Topics of discussion include the nature and physics of power and energy, different sources of energy, renewable sources of energy, in particular wind, solar and hydro, sustainability, depletion model, as well as demand and resources.

ENGR 550 - Independent Study 1-4 hours.

ENGR 660 - Research Seminar 1 hour. Students choose thesis areas and prepare literature surveys as part of the course. Required of all new graduate students.

ENGR 690 - Graduate Seminar 0 hours. Weekly lectures and discussions with visiting lecturers, faculty members, and graduate students. Required of all graduate students throughout their residence.

English as a Second Language

Graduate students may take this 400-level course for graduate credit:

ESL 401 - Speaking and Listening 2 hours. This course will help non-native English speakers improve their speaking and listening skills. Students will work on pronunciation, oral presentation, and extracting meaning from conversations and other kinds of extended discourse.
Course Descriptions

Mechanical Engineering

MECH 500 - Topics in Mechanical Engineering 2-4 hours. The course covers advanced topics which are not ordinarily covered in detail in the general curriculum, but are either current areas of faculty research or areas of current or future industrial interest.

MECH 517 - Introduction to Finite Element Analysis 3 hours. Use of the finite element method to solve problems in the areas of stress analysis, heat conduction, and fluid flow. Weighted residual and variational approaches, shape functions, numerical integration, and the patch test.

MECH 520 - Statistical and Thermal Physics 3 hours. This course deals with the various aspects of macroscopic thermodynamics and describes these statistically in terms of microstates of systems.

MECH 522 - Control Systems 3 hours. Linear feedback control system modeling, analysis, and controller design. Design of state variable systems: controllability and observability, and pole placement using state feedback. Robust control systems: system sensitivity, analysis of robustness, and system with uncertain parameters.

MECH 524 - Advanced Fluid Mechanics 3 hours. Advanced topics in Fluid mechanics: compressible flows, boundary layers, potential flow, and turbomachinery.

MECH 525 - Digital Control Systems 3 hours. This course covers such topics as discrete time systems and the z-transform, sampling and stability analysis techniques, digital controller design, microcomputer implementation of digital systems, quantization and roundoff noise analysis. Prerequisite: MECH 522.

MECH 535 - Thermal Systems 3 hours. Principles of thermodynamics, fluid mechanics, and heat transfer are applied to the analysis, design, and computer simulation of thermal systems. Types of systems include power plants, heating and air conditioning, heat exchangers, and piping systems.

MECH 550 - Independent Study 1-4 hours.

MECH 552 - Introduction to Fatigue and Fracture Mechanics 3 hours. This course is an introduction to linear elastic fracture mechanics and calculation of stress intensity factors. Concepts of fracture, fracture toughness, fracture resistance are covered, along with fatigue crack nucleation, crack growth, high and low cycle fatigue, temperature effects, and predictive equations.

MECH 554 - Multiscale Analysis for Deformation and Failure 3 hours. By developing knowledge and computational skills of molecular dynamics and micromechanics students will have a foundation to develop comprehensive understanding and analysis of multiscale phenomena for deformation and failure. This course prepares students for some cutting-edge technology which includes designing advanced and bioengineering materials.

MECH 586 - Modeling and Simulation of Dynamic Systems 3 hours. Mathematical modeling of physical systems and simulation of linear system responses. System response to varied inputs are studied using classical techniques. Laplace transforms and modeling and simulation software.
MECH 680 - Graduate Thesis 2-15 hours.
MECH 685 - Graduate Internship 1-4 hours.
MECH 699 - Master's Project 3 hours.

Public Administration

PUAD 510 - Principles of Public Administration 3 hours. The course focuses on the theory, principles and practices of the management and operations of the functions of government. This course is the basic introduction to the discipline of Public Administration; its history, its development and its focus on both management principles and policy applications. The fundamental dichotomy of politics and administration will be examined, along with the linkages between the science and administration and how the practice of Public Administration has given rise to the "fourth" branch of American government.

PUAD 511 - Interpersonal and Group Processes 3 hours. This course enhances communication skills and effective participation in interpersonal and social processes through heightened awareness of the various facets of interpersonal processes and communication patterns.

PUAD 528 - Public Sector Budgeting and Accounting 3 hours. This course introduces the theories and skills of public sector budgeting, including financing state and local governments, and examines how the maximization of societal return from public expenditures has developed in recent years. Skills such as revenue and expenditure forecasting, making adjustments due to uncertainties, and developing realistic alternatives are examined and practiced. Budget formulation and administration are emphasized with a view of providing the student with the basic understanding of constructing and managing a budget in the public and nonprofit sectors.

PUAD 531 - Political Environment of Public and Community Services 3 hours. This course presents an overview of the political framework within which public and community service agencies operate; provides an understanding of some of the problems involved in implementing public service programs through the governmental structure; indicates where and how political decisions are made involving public services; and increases the student's ability to interact with his/her agency's political environment. This course also covers proposed responses to climate change/sustainability issues from a global perspective.

PUAD 535 - Foundations of Health Care Management 3 hours. This course examines a range of contemporary health care delivery issues, notably: the impact of the AIDS and H1N1 crises; the rationing of health care resources in the US; the debate over health care coverage for the elderly; and a comparison of the American health care system with other national systems, with special references to the Canadian approach.

PUAD 536 - Foundations of Criminal Justice Management 3 hours. This course examines contemporary criminal justice issues, and the many and varied agencies that make up the criminal justice system in America. It explores tensions between these agencies and examines administrative ways in which the tensions can be addressed and how agencies work together to achieve each of their independent goals.
PUAD 537 - Foundations of Non-Profit Management 3 hours. This course builds on the constructs of PUAD 571 and provides an overview of nonprofit agency and charitable organization administration. This includes organizational structure, human resources issues, financing and budgeting with multiple funding sources, Board - staff relations and applicable management principles. Also covered are strategies for effective planning, administration and operations of programs and personnel. A specific focus of the course is public and non-profit agencies that provide services to children and families. This course also examines an array of ethical problems typical of management in human service agencies.

PUAD 541 - Program Evaluation and Grantsmanship 3 hours. This course introduces the analysis of research design and basic statistics and gives community services/public administration personnel the background to read and judge professional evaluation research as well as the ability to design and carry out basic program evaluation. This course also focuses on the role of grants in public and non-profit organizations with emphasis on techniques and resources of grantsmanship and the importance of grants and grantsmanship in the overall scheme of program planning and organization development.

PUAD 543 - Legal and Regulatory Issues in Criminal Justice 3 hours. This course examines the major theories of criminality, the relationship of criminological theories to crime on the streets, law enforcement and management, adjudication of cases by the courts, corrections, juvenile justice and homeland security. It provides an overview of policing, public safety and court systems, and gives the student an understanding of the constructs of terrorism, domestic and international, the effects of terrorism and the consolidation of responsibilities across the Department of Homeland Security and other agencies to mitigate hostilities, threats, hazards and the consequences of terrorism.

PUAD 544 - Healthcare Policy and Regulation 3 hours. In this course we analyze the role of major institutions in formulating and implementing health policy in the United States. There is discussion of the underlying issues such as market forces and economic influences, legal and policy alternatives and formulation, insurance industry practices and government regulation, and how the health care system operates to deliver health care treatment to individuals and families. The legal framework governing health care administration, management and policy are examined and students study selected legal pronouncements relevant to health care administrators, providers and consumers of care.

PUAD 545 - Legal and Regulatory Issues in Non-Profit Management 3 hours. In this class we examine the distinctions between for profit and nonprofit organizations, with a view toward ensuring that the nonprofit meets the formation and operational requirements to have and remain eligible for IRC Section 501 status. Students are introduced to the practical techniques of filing a Form 1023 or Form 1024, and what an applicant must show in order to receive tax exempt status. Operational issues such as charitable giving rules, the regulation of fund raising, nonprofit employee compensation and risk management and avoiding personal liability are also examined.

PUAD 550 - Independent Study 1-4 hours. Academic inquiry into a particular area not covered in any established course, and carried on outside the usual instructor/classroom setting. A written Plan of Study is required.
**PUAD 561 - Organizational Processes** 3 hours. This course examines organizational problems in the delivery of human services at the local level including health care, public safety, education, counseling, rehabilitation, information and referral, and legal assistance. Organizational processes are analyzed in relation to the distinct goals and environmental and technological characteristics of client processing organizations.

**PUAD 565 - Computer Applications and Management Information Systems for Public Administration** 3 hours. The application of computers to administrative problem solving is examined through such topics as the structure and function of computing systems, administrative applications, and the availability of computing resources. This course gives the student a fundamental and theoretical foundation for management information systems.

**PUAD 571 - Public Administration and Agency Management** 3 hours. This course is intended for those who either are, or who may become, responsible for managing community service/public administration agencies and organizations. The emphasis is on the practical skills necessary for planning, problem analysis, and decision-making.

**PUAD 581 - Human Resources Administration** 3 hours. This course develops skills for designing and implementing human resource systems and analyzes the importance of human resources to organizational performance of public sector and non-profit organizations. Current issues in human resources management are examined, including hiring, termination, performance evaluation, and the impact of global technology. The legal and regulatory framework of employment practices are investigated with the view of providing students with insight and skills to avoid grievances and legal challenges stemming from employment decisions.

**PUAD 590 - Field Work in Public Administration** 2 hours. This course is required of students who have not had experience in a public/community service agency. Students intern in a public/community service agency under the guidance of a faculty member and an agency supervisor.

**PUAD 594 - Economics of Sustainability** 3 hours. Discussion in this course centers on the economic implications of sustainability and how this will impact budgets and resources. Also discussed are the economic opportunities in the shift to a post-carbon economy, triple bottom line accounting, and the roles public administrators might play in this shift.

**PUAD 597 - Topics in Public Administration** 3 hours. In this seminar, which accompanies the culminating Capstone project, we examine professional issues encountered in a variety of public administration settings. Intensive studies of theories, research and practice are based on applied issues that arise for the public administrator professional.

**PUAD 598 - Capstone Seminar I** 2 hours. This course is the comprehensive examination and is the culmination requirement necessary to complete the Master's degree. Students are introduced to the fundamentals of conducting research; survey, case study, quantitative, etc., data analysis and presentation, conducting the literature review, and written reporting -- all of which are major roles of the public administrator. This project is centered on an analysis of an issue or problem in a field of public administration, policy and/or community services.
It involves intensive reflection, research, writing and a poster presentation of a final report with a focus on practical applications that demonstrate the skills developed throughout the program. During this seminar, students identify a project problem or topic and complete a literature review.

**PUAD 599 - Capstone Seminar II** 1 hour. This is a continuation of the seminar begun during the previous semester. Students proceed to describe the project environment and project approach, develop and present research findings and recommendations, and complete and submit the final document. Prerequisite: PUAD 598.

### School Psychology

**PSYC 600 - Special Topics in School Psychology** 1-3 hours.

**PSYC 601 - Foundations of Cultural Diversity** 1 hour. As frontline practitioners in schools, human service agencies, and higher education settings, mental health providers are faced with a proliferation of cultural issues on a daily basis. It is essential that mental health providers develop an appreciation for cultural diversity and an understanding of how cultural diversity issues interact with service provision. This course is intended as an introduction to cultural diversity issues and their impact on the major areas of practice within schools, agencies, and higher education. Upon completion of this course, students will have acquired knowledge regarding cultural issues that provide a foundation for exploring these issues in subsequent specialization courses. (Cross-listed as COUN 601)

**PSYC 602 - Seminar in Cultural Diversity** 2 hours. This course is an advanced seminar on cultural diversity issues and their impact on the major areas of psychology practice and research. Students will explore these issues in depth and pursue literature research on diversity issues related to their area of specialization.

**PSYC 603 - Foundations of School Psychology** 3 hours. The theoretical, scientific and practical underpinnings of professional school psychology are covered, with material drawn from both psychology and education. Topics include cognitive, social, emotional, and cultural bases of behavior; educational theory and instructional psychology, particularly related to basic school subjects (reading, mathematics, and written language); and school psychology as a professional specialty, including history and systems, role and function, models of practice, and current issues with particular attention to practice in a rural setting.

**PSYC 606 - Advanced Developmental Psychology** 3 hours. An in-depth study of the basic scientific area of human developmental psychology. Considers development across the life span through classical theory and more recent formulations with a focus on empirical research findings. Included are biological, cognitive, social, emotional and cultural factors which influence normal development.

**PSYC 607 - Learning and Cognition** 3 hours. A study of the basic processes underlying learning, memory and higher cognitive functions such as conceptualization, problem solving and language. Emphasis on the relevance of recent research and theoretical developments in cognitive psychology to school learning. Topics include attention, memory, information processing, problem solving, reasoning, creativity, and experimental paradigms for the study of cognition and learning.
PSYC 608 - Social Psychology and Behavior 3 hours. This course provides a comprehensive background of the predominant models of human personality as formulated by such theorists as Adler, Freud, Jung, Kelly, and Skinner, as well as focus on current research in personality. Such topics as individual differences in traits, cognitive styles, and forms of emotional relatedness are explored and the current controversies regarding the consistency of personality and the question of genetics versus environmental factors in the evolution of human behavior are examined. The interface between pure personality theory/research and its application to social realities and clinical settings is emphasized.

PSYC 609 - Physical Bases of Behavior 3 hours. An overview of basic neuroanatomy and neurophysiology is presented to provide a foundation for understanding the biological bases of human cognitive functioning. Neurologically based problems encountered in the schools are discussed.

PSYC 611 - History and Systems of Psychology 3 hours. This course presents a comprehensive orientation to the science and practice of psychology. Progressing from ancient foundations to the current state of the discipline, the course is designed to illustrate both the continuity and incremental development of psychology as a science and profession. The course content is organized around three major themes: (1) the historical development of the discipline of psychology as a science and profession; (2) the systems, or "schools of thought" that form the foundation of psychology both historically and currently; and (3) the interweaving influence, as well as tensions, between the science and practice of psychology. The goal is for students to further develop their identities as psychologists through an understanding and appreciation of the broad landscape upon which their discipline is constructed.

PSYC 626 - Psychological and Educational Measurements 2 hours. Basic theory of psychological and educational measurements and the elementary statistics of test score analysis including reliability, validity, item analysis, and scales of measurement. Evaluation and selection of standardized tests is emphasized as well as the theory bases of measurement of individual differences. Observational procedures will also be discussed and implemented.

PSYC 627 - Norm-Referenced Testing I 2 hours. This course focuses on the administration, scoring and interpretation of individually administered norm-referenced instruments. Attention is focused on those instruments related to the assessment of cognitive abilities and learning behaviors of school-aged children. The major purpose is to develop the student’s repertoire and mastery with these measures and to increase the students’ capacity for evaluation of individual behavior and report writing. Co-requisite: PSYC 626. Lab fee required.

PSYC 628 - Academic Functioning 3 hours. Examines the reading, mathematical and language arts processes and methods of assessing these. A variety of educational assessment techniques are reviewed including norm-referenced tests, curriculum-based approaches, and informal probes, and systems of direct observation. The use of these techniques to assist in the identification of educational difficulties is examined. Approaches to interventions for educational difficulties are surveyed highlighting the link between assessment and remediation.

PSYC 629 - Social-Emotional Assessment 3 hours. This course provides information and training about a variety of instruments and techniques available to assess the psychological status and functioning of persons and systems, with a particular emphasis on children, adolescents, and families. Modern thematic storytelling tests and objective behavior rating scales are highlighted.
The course also covers traditional projective approaches, as well as more recently developed techniques involving social skills and family assessment. Important theoretical and measurement issues are discussed as well as ethical concerns. Students are required to practice administration, scoring, and interpretation of many of the techniques discussed. Prerequisite: PSYC 626. Lab fee required.

**PSYC 630 - Special Topics in Assessment I** 1-3 hours.

**PSYC 632 - Norm-Referenced Testing II** 2 hours. Norm-Referenced Tests II is a continuation of training in the processes of assessment of children's cognitive, achievement, and language development. A variety of norm-referenced instruments will be reviewed, including broad-based comprehensive measures and diagnostic measures, as well as approaches for children from different cultural and linguistic backgrounds. Important theoretical issues in intelligence and research-based practices regarding academic development and assessment will be discussed. While students will be required to practice the administration and scoring of assessment instruments, the main focus of this course will be to develop higher-level interpretive skills and ability to communicate findings effectively in a written format. Prerequisite: PSYC 627.

**PSYC 636 - Foundations of Interpersonal Effectiveness** 3 hours. This course focuses on the training and practice of personal skills, which are the prerequisites to the functioning as a professional psychologist. Included is the study of theories and research from which those skills are derived. The course includes lectures, behavioral rehearsal and group activities, and involves critical self-examination and peer review. Students must demonstrate adequate levels of interpersonal skills according to the instructor's evaluation, in order to successfully complete the course. Such success is a prerequisite for admission to the Intervention sequence in the School Psychology Program.

**PSYC 637 - Introduction to Group Dynamics** 1 hour. The focus is on developing an understanding of the group process and its evolution, including basic group concepts and their applications. Students are involved in the process as they experience and then conceptualize group processes. An integral part of the experience is the student's engagement in self-examination. (Cross-listed as COUN 637)

**PSYC 638 - Psychotherapy and Behavior Change** 3 hours. This course covers a broad range of psychological interventions, with particular emphasis on their applications with children and families. Theory and research in counseling and psychotherapy are covered with emphasis on behavior therapy, cognitive behavior therapy, and behavior modification. Prerequisite: PSYC 636.

**PSYC 639 - Exceptionality in Learning and Behavior** 3 hours. This course presents the varieties of exceptionality in human learning and behavior. Various psychologically and educationally handicapping conditions are discussed. Classification systems, diagnosis, symptomology, prevalence, incidence, course and treatment are covered with an emphasis on empirical research findings. Professional, societal, and cultural issues in exceptionality provide an important focus for discussion.

**PSYC 641 - Introduction to Family Therapy** 3 hours. This seminar is a multi-purpose course designed to supplement student experiences in the clinic practicum and to provide a practical introduction to family therapy.
Specifically, students will be trained in concepts and techniques of structural-strategic family therapy through videotaped demonstrations and simulations. Students will also have the opportunity to discuss actual clinic cases as a means of applying family therapy concepts. At the completion of the course, participants should have developed foundation skills for using family therapy interventions. Prerequisite: PSYC/COUN 638.

**PSYC 642 - Clinical Seminar: Advanced Topics in School Psychology** 3 hours. This clinical seminar is a multi-purpose course designed to supplement student experiences in the advanced clinic practicum. The primary purpose of the seminar this semester is to provide students with the opportunity to discuss cases with students and supervisors from other practicum sections. These types of discussions are useful for broadening conceptual perspectives and generating a variety of intervention ideas. A second purpose of the course is to provide students with additional training in areas that are related to direct service provision and integration of such techniques into foundation counseling and assessment approaches.

**PSYC 644 - Techniques of Play Therapy** 3 hours. This course is designed to introduce participants to practical techniques and models of play therapy. Topics covered include play media, designing the therapy room, and such play therapy models as non-directive, relationship, developmental-contextual therapies, and Theraplay. Students are expected to complete 50 hours of supervised experience in play therapy with child clients during the latter part of the course. Prerequisite: Graduate courses in counseling techniques and theories. (Cross-listed as COUN 644)

**PSYC 646 - Consultation and Prevention** 3 hours. This course covers the concepts and practice of consultation in educational and human service settings. Emphases are on mental health and behavioral consultation including child-centered, teacher-centered and system centered techniques. This course has a practicum component. Prerequisite: PSYC 638 or COUN 638. (Cross-listed as COUN 646)

**PSYC 650 - Independent Study** 1-3 hours.

**PSYC 651 - Academic Interventions** 2 hours. This course introduces students to a broad array of academic interventions. During this course students will learn the sequence of development of basic academic skills and how to target academic interventions for students with specific academic needs. There will be special emphasis on reading, writing, and written language interventions. Students will demonstrate their knowledge of the academic intervention process through applied intervention project.

**PSYC 656 - Field Experience in School Psychology I** 1 hour. Each student is placed in a school district one day each week to develop observation skills, gain exposure to the school as a system, begin to interact and practice testing skills with school-aged children and to become oriented to working in the schools as a school psychologist. On-site field supervisors, as well as program faculty, provide ongoing supervision for this experience. A campus-based seminar provides opportunities for in-depth exploration of issues relating to school functioning.
PSYC 657 - Field Experience in School Psychology II 1 hour. This practicum provides a continuation of skill development within the school setting. Students increase their placements to 1.5 days per week in a school district where they practice testing skills and gain experience utilizing observational techniques and providing targeted interventions. In addition, students also participate in provision of special education services where they gain experience working directly with children with disabilities in an academic setting. On-site field supervisors, as well as program faculty, provide ongoing supervision for this practicum. The practicum seminar covers topics such as multidisciplinary teams, the parent-school relationship, and the impacts of educational disabilities on school functioning.

PSYC 658 - Clinic Practicum I 3 hours. This is a practical course where students apply previous learning and gain experience in assessment and intervention with children and families and school consultation. Team collaboration, peer review and case conferences are essential elements of this course. Students work with actual clients at the Child and Family Services Center under supervision of professional psychologists. Supervision is provided through the use of audiotaping, videotaping and observation through one-way mirrors. Topical seminars are also included throughout the semester. Prerequisites: PSYC 629 and 638.

PSYC 659 - Clinic Practicum II 3 hours. A continuation of Clinic Practicum I where students will be performing the same activities at a higher level of autonomy and independence. Prerequisite: PSYC 658.

PSYC 660 - Special Practicum I 1-3 hours.

PSYC 661 - Advanced Practicum 1-6 hours. This practicum provides additional supervised experiences in assessment and intervention at a site arranged by the student and his/her advisor.

PSYC 664 - Practicum in Academic Interventions 1 hour. Each student will be placed in a school district one half day per week. Students will gain experience developing, implementing, and monitoring academic interventions in consultation with classroom teachers and other school support personnel. In addition, students will be involved in case conferences, peer review, and faculty supervision of their academic intervention and consultation activities. Co-requisite: PSYC 651.

PSYC 667 - Internship in School Psychology I 3-9 hours. The internship is the culminating experience of the School Psychology Program. It provides intensive, supervised experience in the roles and functions of a school psychologist and also a broad exposure to the educational and community environment of the internship site. Supervision is provided by one or more on-site certified school psychologists and by the University supervisor. Prerequisites: Comprehensive examinations and satisfactory progress in the program.

PSYC 668 - Internship in School Psychology II 3-9 hours. A continuation of the intensive field-based internship in school psychology, as described in PSYC 667. Prerequisite: PSYC 667.

PSYC 669 - Pre-doctoral Internship I 3-9 hours. The internship is the culminating experience of the doctoral program in school psychology. It provides intensive, supervised experience in the roles and functions of an applied psychologist working in schools and clinical settings. The internship also provides broad exposure to the educational and community environment of the internship site. Supervision is provided by an on-site licensed psychologist, as well as other appropriately certified
school psychologists or credentialed mental health professionals, and by the University supervisor. Prerequisites: Comprehensive examinations and satisfactory progress in the program.

**PSYC 670 - Pre-doctoral Internship II** 3-9 hours. A continuation of the intensive field-based doctoral internship in school psychology, as described in PSYC 669. Prerequisite: PSYC 669.

**PSYC 671 - Statistical Analysis and Research Design I** 3 hours. This course emphasizes: (a) the identification and formulation of research problems; (b) the utilization of research design strategies; and (c) an understanding of appropriate statistics such as one and two way analysis of variance, correlation and regression techniques and their applications.

**PSYC 672 - Statistical Analysis and Research Design II** 3 hours. Using examples relevant to professional psychology, this course covers advanced issues in research design and analysis. Factorial and non-factorial designs, and single-subject designs are discussed. The statistical tests to be covered include ANOVA, including planned comparisons, and ANCOVA. The course emphasizes the appropriate selection and interpretation of designs and analysis for testing specific hypothesis or for conducting program evaluations. Prerequisite: PSYC 671.

**PSYC 673 - Statistical Analysis and Research Design III** 3 hours. Using examples relevant to professional psychology, this course covers advanced issues in correlational research design and multivariate analysis. Multiple regression analysis, factor analysis, along with other multivariate statistics are covered. The course emphasizes the appropriate selection and interpretation of designs and analyses for testing specific hypotheses. Prerequisite: PSYC 672.

**PSYC 674 - Research in School Psychology** 3 hours. This course is specifically focused on the design and evaluation of studies relevant to school psychology. A broad literature is contained within this focus, including that from educational psychology, special education, counseling psychology, clinical psychology, and school psychology itself. Students are expected to apply knowledge and skills learned from previous coursework in this sequence in order to develop their own research plan. Prerequisite: PSYC 672.

**PSYC 676 - Research Institute** 3 hours. This is the introductory course for a series of research seminars focused on the design and analysis of studies relevant to professional psychology. Students will access a broad literature to plan the studies they will conduct during the subsequent seminars.

**PSYC 677 - Pedagogy Institute** 3 hours. This course prepares doctoral students for undergraduate and graduate teaching. It involves exposure to theory and research about pedagogy and opportunities to develop course materials. This is in preparation for course instruction that will follow in conjunction with Pedagogy Seminars.

**PSYC 678 - Research Seminar** 2 hours. A series of six research seminars are required for participants in the Powell Academic Leadership Program. These seminars are taken in consecutive semesters and consist of a sequence of supervised scholarly activities resulting in two completed and publishable research products.

**PSYC 679 - Pedagogy Seminar** 2 hours. A series of four pedagogy seminars are required for participants in the Powell Academic Leadership Program. These seminars provide instruction, mentoring, and supervision for doctoral students acting as teaching assistants and primary instructors in undergraduate and graduate courses.
PSYC 685 - Special Advanced Seminar I 3 hours.

PSYC 687 - Advanced Seminar: Early Childhood Services 3 hours. This course covers issues and topics specifically related to the expanded role of the school psychologist in the assessment and intervention with infants and toddlers. In a combination didactic and seminar format, students are exposed to current theory and research regarding the delivery of services to these children and their families, and are required to think critically about the various topics and issues emerging from this new focus. A practicum experience in an early childhood setting provides opportunities to practice assessment and intervention skills and a context for application of current research.

PSYC 692 - Supervision and Administration of Psychological Services 3 hours. This course prepares psychologists to function in supervisory and administrative capacities in delivering human services in schools and other child and family-oriented settings. Students become familiar with important issues in these areas and understand organizations from systems perspective. The essential elements and models of effective supervision are also examined.

PSYC 695 - Professional Practice Seminar 3 hours. This course examines the professional, legal and ethical practice of school psychology through lecture, discussion and readings. Focuses on the school psychologist as a systems level facilitator/change agent. Topics include special education regulations, the organization and structure of schools, effective facilitation within the system, ethical guidelines, identification and reporting of child abuse, and related issues. Prerequisite: PSYC 603.

PSYC 699 - Dissertation 1-12 hours.

Sociology

Graduate students may take these 400-level courses for graduate credit:

SOCI 420 - Social Theory: A Survey 4 hours. An examination of contemporary theoretical schools, e.g. symbolic interactionism, structural functionalism, exchange and conflict, and ethnomethodology. Special attention devoted to the precursors and contemporary representatives of the respective schools. Prerequisite: SOCI 110 or ANTH 110 or permission of instructor.

SOCI 431 - Research Design and Strategies 4 hours. This course examines the methods by which social science researchers generate new knowledge and covers major data collection designs, sampling techniques, and measurement strategies. Students spend the semester developing their research skills and designing their own research proposals. Prerequisite: SOCI 110, ANTH 110, or POLS 110.