

- 730 Facility Planning and Management. 3 hrs.**
This course teaches the systematic collection and utilization of data in planning for educational facilities. (PR: Principal or supervisor certificate or consent)
- 740 Public School Law. 3 hrs.**
This course presents the effect of case, statutory, and constitutional law as adjudicated in state and federal courts on public school operation. (PR: Principal or supervisor certificate or consent)
- 745 Higher Education Law. 3 hrs.**
This course presents the effect of case, statutory, and constitutional law as adjudicated in state and federal courts on higher education operation.
- 755 Internship: Administration in Higher Education 3 hrs.**
This course provides a field experience in higher education administration. (PR: Consent)
- 756 Current Issues in Higher Education. 3 hrs.**
This course focuses on current and emerging problems of higher education. It deals with both societal and internal factors which impinge on the administration of colleges and universities.
- 760 Politics of Education. 3 hrs.**
This course explores the social process of governance in the public schools including higher education. The milieu of federal, state, and local inputs will be explored.
- 762 The Politics of Higher Education. 3 hrs.**
This course is designed to develop an understanding of the complex internal and external forces and the political processes that affect higher education institutions.
- 764 Advanced Research I. 3 hrs.**
This course will develop knowledge about and skills in using quantitative and qualitative methods in educational research. It will further prepare doctoral candidates for comprehensive exams as well as dissertation research.
- 765 Advanced Research II in Leadership Studies. 3 hrs.**
This is an advanced research course directed toward the preparation of a thesis or dissertation. (PR: Consent)
- 770 Practicum. 3 hrs.**
This is a highly individualized cooperative educational administration experience between the college and another public agency. (PR: Consent)
- 771-772 School District Leadership 3-6 hrs.**
This is an individualized cooperative field experience in district level school administration. (PR: Consent)
- 775 Seminar. 3 hrs.**
This course is a concentrated analysis of current problems in educational administration. (PR: Consent)
- 776 Computer Analysis in Leadership Studies Research. 3 hrs.**
This course provides the development of skills and competencies in data analysis and management. It is designed for doctoral students in the data analysis stage of dissertation preparation. (PR: Consent)
- 780 Special Topics. 1-12 hrs.**
This course requires study, reading and research in an approved area of education and supervision. (PR: Consent)
- 797 Doctoral Research. 1-12 hrs.**
Dissertation research is the purpose of this course. (PR: Consent)

LEGAL ENVIRONMENT (LE)

- 691 Government and Business Relationships. 3 hrs.**
Preparing business executives for dealing with problems of the firm in its relationships with government. Applies case analysis to the board categories of antitrust, trade regulation, and agency regulation. (PR: GSM admission)

MANAGEMENT (MGT)

- 500 Analytical Methods and Techniques. 3 hrs.**
Provides competency in some of the basic quantitative skills necessary for analytical work in business administration. Required of all candidates who have had little or no undergraduate background in mathematics.
- 502 Research Methods. 3 hrs.**
This course provides the student with the necessary knowledge to perform business research. Emphasis is placed on applicable research techniques. In addition, several statistical techniques are covered including multiple regression and analysis of variance. (PR: MGT 500)

- 520 Operations Management. 3 hrs.**
An examination of the design and operation of systems for the creation of goods and services in both manufacturing and non-manufacturing organizations. Emphasis is placed upon the application of quantitative and conceptual decision tools for the planning and control of production systems. (PR: MGT 500 or MTH 203 and MGT 218; and MGT 320 or MKT 511; and ECN 253 or ECN 501)
- 601 Quantitative Methods for Business. 3 hrs.**
The use of quantitative methods for managerial decision making. A review of basic calculus and statistics as required in business. Other topics include decision analysis, linear programming, and queuing. (PR: M.B.A. admission)
- 620 Human Resource Management. 3 hrs.**
The study of policies, methods, and techniques utilized in personnel management and human relations. Specific attention is given to problems of recruitment, selection, compensation, motivation, communications, training, service and benefit programs, performance evaluation, safety, discipline, business ethics, and community relations. (PR: GSM admission or permission of GSM academic advisor)
- 630 Management and Supervisory Skills Development. 3 hrs.**
An analysis and application of personal and organizational skills associated with the effective management of both public and private sector organizations. Skills to be developed or refined include time management, decision making, delegation, stress management, oral and written communication, team-building and others. Applied exercises, case studies, simulation, role play, films, and other learning methods are emphasized. (PR: MGT 672)
- 650-651 Special Topics. 1-3; 1-3 hrs.**
(PR: Permission of the division head and full M.B.A. admission or permission of GSM academic advisor)
- 660 Independent Study. 1-4 hrs.**
Independent study of a specific nature under the supervision of a qualified faculty member. Hours of credit are determined by the magnitude of the project. (PR: permission of division head or GSM academic advisor)
- 672 Organizational Behavior. 3 hrs.**
Basic ideas and concepts for the effective management of an organization. Major topics include motivation, communication and decision-making processes, group dynamics, leadership study, conflict management, work and organizational design, and organization development. Emphasis on organizational behavior and theory. (PR: GSM admission and MKT 511)
- 673 Problems in Personnel Management. 3 hrs.**
Principles and procedures of the personnel system in the firm; selected areas of recruitment and selection; training and development; performance appraisal and evaluation; general communications system, and role of government in manpower administration. (PR: GSM admission)
- 674 Production/Operations Management. 3 hrs.**
A study of operations management methods used in production, manufacturing, services, and other business operations. Includes project management, capacity planning, and transportation problems. (PR: Permission of GSM academic advisor and MGT 500)
- 675 Problems in Labor-Management Relations. 3 hrs.**
Comprehensive coverage of the development of the field of industrial relations. The impact of organized labor and federal social legislation of management decision. Alternative directions for future developments are studied. (PR: GSM admission)
- 676 Organization Theory and Design. 3 hrs.**
An analysis of organizational systems and subsystems incorporating traditional, behavioral, and situational approaches to organizational and work unit design. Emphasizes environmental interface and interdependencies as functions of internal systems phenomena (PR: M.B.A. admission)
- 692 Ethics and Global Aspects of Business. 3 hrs.**
An examination of the administrator's social, ethical, and environmental responsibilities to his employees, customers, and the general public and other external factors which management must be cognizant of in modern society. (PR: GSM admission)
- 699 Business Policy and Strategy. 3 hrs.**
The study of administrative decision making under conditions of uncertainty. Policy construction at top administrative levels with emphasis on strategy and ethics with consideration of major functions of the business organization. (PR: Permission of GSM academic advisor)

MANAGEMENT INFORMATION SYSTEMS (MIS)

- 678 Management Information Systems. 3 hrs.**
To familiarize students with the characteristics and functions of management information systems, as well as the benefits, limitations, and applications for advanced management information systems. (PR: GSM admission)

MARKETING (MKT)

- 511 Marketing and Management. 3 hrs.**
A comprehensive survey of the fundamental principles of management and marketing applicable to all organizations. Provides the student with a basis for analyzing appropriate situations in a management/marketing framework.
- 580-581 Special Topics. 1-4; 1-4 hrs.**
650-651 Special Topics. 1-3; 1-3 hrs.
(PR: Permission of the division head and full M.B.A. admission)
- 660 Independent Study. 1-4 hrs.**
Independent study of a specific nature under the supervision of a qualified faculty member. Hours of credit are determined by the magnitude of the project. (PR: MKT 682 and permission of division head and academic advisor)
- 682 Advanced Marketing Management. 3 hrs.**
An integrated approach to marketing from a managerial point of view: making use of economic, quantitative, and behavioral concepts in analyzing and developing a framework for the decision-making and implementation of the firm's marketing program. (PR: M.B.A. admission or permission of GSM academic advisor)
- 683 Advanced Marketing Research. 3 hrs.**
A study of research methods and procedures used in the marketing process; emphasis will be given to the sources of market data, sampling, preparation of questionnaires, collection and interpretation of data. (PR: MKT 682)
- 685 Marketing Problems. 3 hrs.**
Determination of the marketing mix within the framework of the problem-solving and decision-making process. (PR: MKT 682)
- 687 Seminar in Marketing. 3 hrs.**
An advanced study of basic concepts of current problems in Marketing. Seminar discussions and research projects. (PR: MKT 682)
- 688 Advanced Transportation. 3 hrs.**
Current national transportation problems and a review of the various modes including history of the modes. (PR: MKT 682)
- 689 Advanced Physical Distribution. 3 hrs.**
A study of activities concerned with efficient movement of products from the sources of raw materials supply, through production to the ultimate consumer. These include freight transportation, warehousing, order processing, forecasting, etc. (PR: MKT 682)

MATHEMATICS (MTH)

- 500 Structure of Algebra. 3 hrs.**
Informal development of modern elementary algebra. Recommended for pre-service middle school teachers and for elementary and secondary in-service teachers. May not be used for either a 5-12 mathematics specialization or for any degree offered by the Mathematics Department. (PR: MTH 130 or equivalent)
- 501 Structure of Modern Geometry. 3 hrs.**
Informal development of geometry with an exploration of probability and statistics. Recommended for pre-service middle school teachers and for elementary and secondary in-service teachers. May not be used for either a 5-12 mathematics specialization or for a degree offered by the Mathematics Department. (PR: MTH 130 or equivalent)
- 511 Mathematical Modeling. 3 hrs.**
Students will work in teams to construct mathematical models of various real-world situations. Problems to be modeled will be drawn from diverse areas of application and will use a wide range of undergraduate mathematics. (PR: MTH 231, or 230 and permission of instructor)
- 515 Partial Differential Equations. 3 hrs.**
Elementary partial differential equations. Heat equation, Laplace's equation, separation of variables, Fourier series, vibrating strings, eigenvalue problems, finite differences, Bessel functions, Legendre polynomials. (PR: MTH 330 and 335, or permission)
- 518 Biostatistics. 3 hrs.**
Statistical skills for biological/biomedical research, with emphasis on applications. Experimental design/survey sampling, estimation/hypothesis testing procedures, regression, ANOVA, multiple comparisons. Implementation using statistical software such as SAS, BMDP.
- 519 Forensic Statistics. 3 hrs.**
Basic theory of probability and statistics, adds from Bayes' Theorem for transfer evidence, likelihood ratio, population and statistical genetics, statistical issues in paternity testing and mixtures, and presenting evidence. (PR: Admission to M.S. program in Forensic Science, or permission)

- 527 Advanced Calculus I. 3 hrs.**
A rigorous study of the real number system, continuity and differentiability of functions of a single variable, integration of functions of a single variable, infinite series. (PR: MTH 231 and 300, REC: MTH 330)
- 528 Advanced Calculus II. 3 hrs.**
A rigorous development of algebra and topology of Euclidean spaces, differentiability and integrability of functions of several variables. (PR: MTH 427 or 527)
- 542 Numerical Linear Algebra. 3 hrs.**
Direct and iterative methods for numerical solution of linear systems of equations. Eigenvalues and eigenvectors. Error analysis and norms. Related Topics. (PR: MTH 230, 330)
- 543 Numerical Analysis. 3 hrs.**
The theory and technique of numerical computation involving the difference calculus, the summation calculus, interpolation methods, solutions of equations, and methods of solution of ordinary differential equations. (PR: MTH 230)
- 545-546 Introduction to Theory of Statistics I, II. 3; 3 hrs. I (545), II (546)**
Probability spaces, conditional probability, and applications. Random variables, distributions, expectation, and moments. Parametric statistics: sampling methods, estimation of parameters, tests of hypotheses. (PR: MTH 230 for 545; MTH 445 or 545 for 546)
- 548 Fundamental Concepts of Modern Geometry. 3 hrs. I.**
Finite geometries, basic background material for the modern development of Euclidean Geometry, other geometries. (PR: MTH 230)
- 549 Projective Geometry. 3 hrs.**
Projective geometry using both synthetic and algebraic methods. (PR: MTH 230)
- 550 Fundamental Concepts of Modern Algebra. 3 hrs.**
Structure of the abstract mathematical systems; fields, rings groups, with illustrations and applications from number theory. (PR: MTH 230; REC: MTH 300)
- 580-583 Special Topics in Mathematics. 1-4; 1-4; 1-4; 1-4 hrs.**
Courses on special topics not listed among the current course offerings. (PR: Permission of instructor)
- 585-588 Independent Study. 1-4; 1-4; 1-4; 1-4 hrs.**
(PR: Consent of instructor and department chairman)
- 589 Seminar for Teaching Assistants. 1 hr.**
An introduction to techniques of teaching mathematics with emphasis on lower-level mathematics courses. (PR: Assignment to teach mathematics as a teaching assistant; CR/NC)
- 591 Master's Essay. 3 hrs.**
In-depth exploration of topics related to a theme chosen by the instructor; experience in reading, speaking, and writing mathematics. (PR: Any two of MTH 527, 545, 550, or equivalents.)
- 610 Modern Algebra. 3 hrs.**
The structure of semigroups, groups, rings, fields, modules, vector spaces, lattices and related topics. (PR: MTH 450 or 550 or equivalent)
- 630 Topology. 3 hrs.**
General topology including separation axioms, connectedness, compactness, convergence, continuity, metric spaces, product and quotient spaces. (PR: MTH 427 or 527 or 450 or 550)
- 640 Theory of Functions of Complex Variables. 3 hrs.**
A study of algebra, topology, and geometry of the complex plane; holomorphic functions; conformal mapping; analytic functions and analytic continuation; complex integration; representation theorems; convergence theorems and related topics. (PR: MTH 427 or 527)
- 641 Complex Variables II. 3 hrs.**
A study of algebra, topology, and geometry of the complex plane; holomorphic functions; conformal mapping; analytic functions and analytic continuation; complex integration, representation theorems; convergence theorems and related topics.
- 650 Theory of Functions of Real Variables. 3 hrs.**
A study of measure and integration and related topics. (PR: MTH 528 or 428)
- 651 Real Variables II. 3 hrs.**
A study of measure and integration and related topics.
- 660 Stochastic Processes. 3 hrs.**
Theory and applications of Markov chains. (PR: MTH 445 or 545)
- 661 Advanced Mathematical Statistics. 3 hrs.**
Topics in mathematical statistics including distribution theory for functions of random variables, convergence concepts, sufficient statistics, finding optimal estimates for parameters, optimal tests of hypotheses. (PR: MTH 446 or 546 or permission of instructor)
- 665 Optimization Mathematics. 3 hrs.**
Classical optimization of functions of several variables. Theory and methods of linear and nonlinear programming. (PR: MTH 231 and consent of department; MTH 427 recommended)

- 670 Independent Study. 1-4 hrs.**
An independent program of study of advanced topics not normally covered in other courses. The topics are chosen upon mutual agreement between the student and the instructor. (PR: Consent of instructor and Department Chairman)
- 681 Thesis. 1-6 hrs.**
- 690-693 Special Topics. 1-4 hrs.**

MICROBIOLOGY, IMMUNOLOGY AND MOLECULAR GENETICS (MCB)

- 620 Principles of Medical Microbiology. 6 hrs. I.**
The study of microorganisms, immunobiology, immunologic diseases, host resistance and the means by which diseases are produced and prevented. (PR: Organic Chemistry, General Microbiology and consent of instructor)
- 622 Current Topics in Molecular Biology. 1 hr.**
Critical discussion of current literature/concepts. Participants present published research papers on topic(s) with a molecular biology component. Presentations are followed by discussion/evaluation of the contribution of the research.
- 642 Graduate Microbiology I (Physiology/Genetics). 4 hrs. II.**
An advanced treatment of microbiology with emphasis on the molecular aspects of anatomy, taxonomy, and physiology and genetics of microorganisms.
- 643 Principles of Immunology. 3 hrs. I.**
Basic principles of the immune response system of humans and related mammals. Concepts of B & T cell function and interrelationships emphasized. (PR: Cellular and Molecular Biology)
- 648 Molecular Aspects of Pathogenesis. 3 hrs.**
An in depth study of molecular mechanisms of bacterial, viral, and immunemediated disease processes. Course Requirements: BMS 600 and BIC 620
- 660 Diagnostic Virology. 3 hrs., II.**
A comprehensive survey of methodologies used to detect and characterize viral specific antibodies and antigens and the status of cellular immunity in virus infected hosts. (PR: MCB 620)

MINE SAFETY (MSF)

- 510 Survey of Mining. 3 hrs.**
An overview of mining to provide the participant with a general understanding of mining history, development systems terminology, procedures, methods and safety and health activities.
- 511 Mine Safety Program Analysis. 3 hrs.**
This course prepares the participant for the effective analysis of safety programs and provides some specific applications in the mining environment.
- 512 Mine Safety and Health Legislation. 3 hrs.**
A survey of the legislation that has affected safety and health in mining with special emphasis of the Federal Mine Safety and Health Act of 1977.
- 513 Mine Safety and Health Management. 3 hrs.**
This course covers the principles, functions and philosophies of mine management.
- 514 Hazard Control in Mining. 3 hrs.**
A study of how to recognize accident potential throughout the mining industry.
- 525 Statistics/Biostatistics, Epidemiology and Industrial Hygiene. 3 hrs.**
Statistics/Biostatistics, Epidemiology and Industrial Hygiene as these subjects relate to health hazards in the mining environment. (PR: Module #1 of the Advanced Industrial Hygiene Program)
- 526 Industrial Toxicology and Airborne Contamination in Mining Environments. 3 hrs.**
Principles of Toxicology: biochemistry, biological monitoring, biological transformation and chemical hazards. Properties, behavior and measurement of airborne particles. Special topics: sampling and evaluating airborne asbestos dust. (PR: Module #1 of the Advanced Industrial Hygiene Program)
- 527 Physical and Biological Health Hazards in Mining and Milling Operations. 3 hrs.**
Physical hazards: heat, noise and radiation. Biological hazards: atmospheric transport of microorganisms that cause disease. (PR: Module #1 of the Advanced Industrial Hygiene Program)
- 580-583 Special Topics. 1-4; 1-4; 1-4; 1-4 hrs.**
A study of special topics not offered in regularly scheduled courses.
- 585-588 Independent Study. 1-4; 1-4; 1-4; 1-4 hrs.**
- 591-594 Workshop (Selected Topics). 1-4; 1-4; 1-4; hrs.**
- 621 System Safety Engineering in the Mining Industry. 3 hrs.**
A study of the analytical tools used in the recognition, evaluation and control of exposure to hazards in the Mining Industry.

- 622 Accident Prevention in the Mining Industry. 3 hrs.**
A survey course which discusses why and how mining accidents occur, factors in successful safety programs and the recognition, evaluation, and control of accident causes.
- 624 Mine Haulage and Transportation. 3 hrs.**
A study of the operation of hoisting haulage equipment used in the mining industry.
- 625 Philosophical Concepts of Mine Safety and Health. 3 hrs.**
An analysis of the philosophies of mine safety and health; application of these philosophies to actual mining situations.
- 626 Safety and Health Research in the Mining Industry. 3 hrs.**
An analysis and study of selected works of national and international authors concerning mine safety and health.
- 627 Health Hazards in Mining. 3 hrs.**
A broad spectrum approach to the mine health field which includes: the principles for recognition, evaluation and control of health hazards in mining.
- 628 Man, Machines and the Environment in the Mining Industry. 3 hrs.**
A study of the interactions of man, machines and the environment. The role of these interactions in causing or in preventing accidents.
- 629 Problem Analysis and Consultation in Mine Safety and Health. 3 hrs.**
A study of the rational process of problem solving decision making consultation with emphasis on realistic case studies.
- 631 Mine Accident Investigation and Reporting. 3 hrs.**
A study of the principles, techniques and procedures of investigations of mine accidents including attendance in court and report writing.
- 635 Sampling, Industrial Ventilation, and Respiratory Protective Equipment for Mining and Milling Operations. 3 hrs.**
Gas, vapor and particulate sampling - industrial ventilation for control of health hazards. Use of respiratory protective equipment to control health hazards. (PR: Module #1 of the Advanced Industrial Hygiene Program)
- 636 Threshold Limit Values: Sampling and Analytical Techniques. 3 hrs.**
Threshold limit values and material safety data sheets. Hands-on experience in collecting industrial hygiene samples and subsequent laboratory analysis of the samples. (PR: Module ?1 of the Advanced Industrial Hygiene Program)
- 637 Stress and its Impact on Safety and Health in Mining. 3 hrs.**
A study on stress and its impact of safety and health in mining. Activities will be scheduled to enable the student to apply, in a work setting, some of the basic stress concepts.
- 679 Problem Report. 3 hrs.**
- 681 Thesis. 1-6 hrs.**
Individual research on a specific problem of concern to the student and of significance to mine safety.
- 690-692 Seminar. 1-4 hrs.**

MUSIC (MUS)

- 510 Introduction to World Music. 3 hrs.**
This course will survey native musics of Africa, Asia, and the Americas as an aspect of culture. No formal background in music is required, as students will learn techniques for listening and articulating responses to music.
- 526 American Music and Its Influences. 3 hrs.**
Musical and cultural influences of European, West Africa, Caribbean, and Native American societies on United States music from 1650-1920. Specific application to concert music. (PR: Graduate standing or permission of instructor)
- 540 Graduate Theory Review. 2 hrs.**
Review of undergraduate music theory for entering graduate students who are deficient or wish to review music theory skills.
- 550 Guitar Literature. 2 hrs.**
A survey of the literature for guitar from c. 1400 to the twentieth century; to expose the guitarist to many of the important composers and their works.
- 551 Guitar Pedagogy. 2 hrs.**
A survey of guitar pedagogy materials, and a practicum in teaching classical guitar.
- 570 Music Production Practicum. 1 hr.**
Application of musical production processes, theories, and techniques. Specialized practical experience in all musical aspects of rehearsal and performance.
- 579a-d Graduate Class Piano. 1 hr.**
Class instruction progressing from beginner to advanced. Development of literature and skills needed to pass the prano proficiency exam. (PR: Permission)

- 580-583 Special Topics. 1-4; 1-4; 1-4; 1-4 hrs.**
- 585-588 Independent Study. 1-4; 1-4; 1-4; 1-4 hrs.**
- 591-594 Workshop. 1-4; 1-4; 1-4; 1-4 hrs.**
- 601 Symphonic Literature. 3 hrs.**
A survey of orchestra literature beginning with the 16th century; the Mannheim composers, Viennese classics, the Romanticists, the national schools, and late European, South American and American developments.
- 604a Keyboard Literature. 2 hrs.**
A survey of keyboard literature from the 14th to the 20th century. Emphasis is on stylistic developments and formal procedures.
- 604b Chamber Music Literature. 2 hrs.**
A survey of chamber music literature from the Baroque Era to the 20th century. Analysis of form emphasized in the study of string quartet trio, quintet, and various other combinations.
- 604c Song Literature. 2 hrs.**
The song literature of Western Europe and America, also including contemporary material from other countries; interpretation, song study, program building, languages, and interpretation of accompaniments. For singers and accompanists.
- 604d Choral Literature. 2 hrs.**
A comprehensive study of the forms and styles of Choral Composition from Renaissance to present day.
- 610 Philosophy of Music Education. 3 hrs.**
Basic concepts of music education and their application to problems of music teaching, supervision and administration.
- 611 Psychology of Music. 3 hrs.**
Vibrational stimuli, resultant reactions, and factors involved in development of musical skills, as well as measures of aptitude and achievement.
- 612 Projects and Problems in Music. 3 hrs.**
Special problems and projects chosen by the student for investigation. Extensive study of a single problem or project in detail.
- 614 The Teaching of Music Appreciation. 2 hrs.**
Advanced methods and materials for teaching appreciation of music in grades 1-12.
- 615 Band Maneuvers and Pageantry. 2 hrs.**
The marching band. The marching and musical problems which are encountered in training and operating a band for football games and other events involving marching and playing.
- 616 Curriculum Construction and Revision. 3 hrs.**
Survey of recent developments in public school curricula and their effect on music offerings. Preparation of course and curricular content.
- 617 Seminar in Music Education. 3 hrs.**
An advanced study of basic concepts of current problems in music education.
- 618a Administration of Instrumental Music. 3 hrs.**
The planning and operation of the instrumental program and the details of programming the work in a school system.
- 618b Administration of Choral Music. 3 hrs.**
A study of the organization of choral music programs including: recruitment, auditions, scheduling, rehearsal arrangement, programming, touring, and budget.
- 619a Seminar in Vocal Pedagogy. 2 hrs.**
A study of the techniques of singing and their application to private and class instruction. Emphasis placed upon diagnosis of problems, and teaching under supervision.
- 619b Seminar in Piano Pedagogy. 2 hrs.**
An analytical survey of developments in piano techniques and pedagogical procedures with open discussions on various facets of piano teaching.
- 620a Instrumental Workshop. 2 hrs.**
Problems of the instrumental teacher at all levels; practical work in the techniques of handling beginning classes and ensembles of all types.
- 620b Choral Workshop. 2 hrs.**
A practicum approach to problems of choral techniques and materials with special emphasis placed upon high school and junior high school levels.
- 621 Introduction to Graduate Studies in Music: Research and Writing. 3 hrs.**
Introduction to music research with emphasis on investigative methods and applications, procedures, and bibliography. Concentration on expository writing style and format.
- 629a Choral Conducting and Interpretation. 2 hrs.** Performance analysis of choral music from the Renaissance, Baroque and Classical periods as a basis for the expansion of ability in conducting. Students will conduct university ensembles in rehearsal and performance.

- 629b** **Choral Conducting and Interpretation. 2 hrs.** Continuation of Music 629a with emphasis upon Romantic and Contemporary music. Some opportunity given to work with operatic conducting. Does not require Music 629a as a prerequisite.
- 630a** **Instrumental Conducting and Interpretation. 2 hrs.** The special problems involved in conducting and training instrumental groups at all levels.
- 630b** **Instrumental Conducting and Interpretation. 2 hrs.** A continuation of 630a.
- 640a** **Music Theory. 3 hrs.**
Analytical and writing techniques of 19th and 20th Century music.
- 640b** **Music Theory. 3 hrs.**
Continuation of Music 640a.
- 641** **Advanced Counterpoint. 3 hrs.**
An intensive study of contrapuntal techniques, styles, and forms through composition and analysis.
- 642** **Procedures and Techniques for Elementary Music (Grades K-6). 3 hrs.**
Fundamentals of Music; experience in keyboard, guitar, recorder and autoharp. Survey of materials and methodology to aid in establishing program in school music. Non-majors only.
- 645a** **Original Composition. 2 hrs.**
- 645b** **Original Composition. 2 hrs.**
- 646** **Advanced Choral Arranging. 2 hrs.**
Techniques of choral composition and arranging with emphasis on the mixed choir. Arrangements and original works sung by choral groups and conducted by students.
- 647** **Advanced Band Arranging. 2 hrs.**
A study of the scoring for modern concert and marching bands, the transcription of works for other media as well as original works; analysis of band literature, harmonic and formal.
- 648** **Advanced Orchestration. 2 hrs.**
Scoring compositions from other media for modern orchestras of various sizes.
- 649** **Stage Band Arranging. 2 hrs.**
A study of the special techniques involved in scoring for the contemporary stage band, including harmony used, voicing of the various instruments, and a study of current practices.
- 650** **Ancient and Medieval Music. 3 hrs.**
Ancient Greek musical theory, Gregorian chant and its outgrowths, secular monophony, sacred and secular polyphony and its development through the fourteenth century.
- 651** **Music of the Renaissance. 3 hrs.**
The English, Burgundian and Netherland schools; secular forms; chanson, madrigal, and lied; instrumental music; mannerism and the end of an age.
- 652** **Music of the Baroque Era. 3 hrs.**
The monodic revolution: madrigal to cantata, opera, oratorio; Italian leaders; Vivaldi, Bach, and Handel.
- 653** **Music of the Classical Era. 3 hrs.**
Pre-Classic styles and the formation of a classical style in music in symphony, concerto, opera, the sonata, and choral music through Beethoven.
- 654** **Music of the Romantic Era. 3 hrs.**
A study and evaluation of Beethoven's principal works and the life and works of Schubert, Mendelssohn, Chopin, Schumann, Brahms, and their contemporaries.
- 655** **Contemporary Music. 3 hrs.**
Musical developments since Wagner: Debussy, Stravinsky, Mahler, Strauss, Schoenberg, Bartok and their contemporaries. Developments in electronic and aleatoric music, and new notations.
- 656** **Seminar in Performance Practice. 2 hrs.**
Students will prepare and perform music from a selected style period, making their own editions with correct realization and ornamentation. May be repeated for credit.
- 670** **Advanced Materials and Methods (Grades 1-6). 3 hrs.**
A comprehensive survey of available materials in singing, reading, listening, rhythm, and creating program of school music for the elementary grades; use of such materials in the methodology of teaching. (PR: Graduate music majors only)
- 675** **Creative Activity for Children. 3 hrs.**
Ways of using creative activity in the music program, methods of presenting creative song writing, rhythms, instrument construction, instrumental expressing, dramatization, program building.
- 679** **Problem Report. 1-3 hrs.**
- 681** **Thesis. 1-6 hrs.**

Applied Music

- 680** **Saxophone. 1-2 hrs.**
- 682** **Flute. 1-2 hrs.**
- 683** **Oboe. 1-2 hrs.**

684	Clarinet. 1-2 hrs.
685	Bassoon. 1-2 hrs.
686	French Horn. 1-2 hrs.
687	Trumpet. 1-2 hrs.
688	Trombone. 1-2 hrs.
689	Euphonium. 1-2 hrs.
690	Tuba. 1-2 hrs.
691	Violin. 1-2 hrs.
692	Viola. 1-2 hrs.
693	Cello. 1-2 hrs.
694	String Bass. 1-2 hrs.
695	Piano. 1-2 hrs.
696	Voice. 1-2 hrs.
697	Organ. 1-2 hrs.
698	Percussion. 1-2 hrs.
699	Guitar. 1-2 hrs.

NURSING (NUR)

Graduate nursing courses are open only to those students admitted to the nursing program.

- 580-584 Special Topics in Nursing. 1-4 hrs.**
Program of study not normally covered in other courses. Topics vary from semester to semester. (PR: Permission of instructor)
- 585-588 Independent Study in Nursing. 1-4 hrs.**
Courses taught by tutorials; directed independent readings or research; problem reports, and other activities designed to fill needs of individual students.
- 591-594 Nursing Workshop. 1-4 hrs.**
Practical, participatory courses for advanced students. Experience in new techniques and application of new knowledge.
- 602 Theoretical Foundations in Nursing. 3 hrs.**
Provides students with opportunity to relate a philosophical and theoretical base to concepts and processes inherent in nursing. Emphasis is on analysis of nursing theories and their relationship and application to research and practice.
- 604 Leadership in Nursing. 3 hrs.**
Explores the theoretical basis for effective leadership in nursing. Emphasis is placed on analysis of leadership, characteristics and behaviors of leaders, and the role of the nurse leader.
- 606 Advanced Nursing Research. 3 hrs.**
Provides the opportunity to develop a research approach to nursing situations. Focus is upon the development of a research proposal. (PR: or concurrent NUR 602 or Perm)
- 608 Issues in Health Care. 3 hrs.**
Explores and evaluates concerns germane to contemporary nursing. Focus is upon the role of nursing in addressing health issues affected by social, economic, political, and technological forces.
- 616 Curriculum Development in Nursing. 3 hrs.**
Introduces the various component in the curriculum development process. Emphasis is on philosophy, objectives, curriculum designs, and program evaluation. Factors influencing curriculum development, implementation, evaluation, and nursing curriculum patterns are examined.
- 618 Teaching in Nursing. 3 hrs.**
Investigates the responsibilities of the educator in contemporary nursing. Emphasis is upon the instructional process. Practicum allows student to practice the role of the teacher in a variety of educational experiences.
- 619 Practicum: Teaching in Nursing. 3 hrs.**
Guided experience in didactic teaching of nursing clinical teaching, supervision and evaluation of students.
- 622 Advanced Family Nursing I. 5 hrs.**
Introduction to knowledge and skills essential for comprehensive health assessments, analysis of data, formulation of diagnoses, development of the therapeutic plans, and implementation of health promotion and maintenance activities. Practicum included. (PR or concurrent: NUR 602, NUR 604)
- 624 Advanced Family Nursing II. 5 hrs.**
Provides advanced knowledge and nursing management of common and acute self-limiting health problems of individuals and families of various age groups. Includes pathology and therapeutic modalities related to specific health problems. Practicum included. (PR: NUR 622, PR or concurrent: NUR 606)
- 626 Advanced Family Nursing III. 5 hrs.**
Provides advanced knowledge of chronic illness and the long-term nursing management of health care problems. Includes pathology and therapeutic modalities related to management of chronic health problems. Practicum included. (PR: NUR 624)

- 632 School Nurse Practitioner Role in School Health I. 3 hrs.**
Focus is upon the role of the school nurse practitioner in the school system. (PR: NUR 602, NUR 604 or permission)
- 634 School Nurse Practitioner Role in School Health II. 3 hrs.**
Focus is upon the role of the school nurse practitioner in providing health care to school age children. (PR: NUR 632 or concurrent or Perm)
- 642 Organizational Dynamics in Nursing. 3 hrs.**
Focus is upon the organizational dynamics as they apply to the nurse manager role in health care delivery systems.
- 644 Financial Strategies in Nursing Administration. 3 hrs.**
Examines the financial management role of the nurse administrator in relation to economic, political, and societal trends.
- 646 Nursing Management in Health Care Settings I. 6 hrs.**
Focuses on the application of theories and principles related to nursing management. Practicum included. (PR or concurrent: NUR 604, NUR 606; PR: NUR 642, NUR 644)
- 648 Nursing Management in Health Care Settings II. 6 hrs.**
Practicum focuses upon the application of the role components of the nurse manager in selected health care settings. Seminars included. (PR: NUR 646)
- 662 Pharmacology for Nurses in Advanced Practice. 3 hrs.**
Focus is upon a review of the knowledge base in the basic science of drugs and on how this knowledge base can be applied to client care and education by nurses in advanced practice. (PR: Evidence of current RN license and perm)
- 679 Problem Report in Nursing. 1-3 hrs.**
The preparation of a written report on a research problem or field of study in nursing.
- 681 Thesis. 1-6 hrs.**
Individual research in a selected area of nursing under direction of a faculty member. (PR: NUR 606)
- 690-693 Seminar in Nursing. 1-3 hrs.**
Topics in nursing not covered in other courses; topics will vary.
- 695 Internship: Advanced Family Nursing. 6 hrs.**
Focus is upon the role of the family nurse practitioner using the case management approach in a supervised contractual work study arrangement with a health care agency. (450 hrs. minimum) (PR: NUR 626)
- 697-698 Instructional TV. 1-4 hrs.**
A course based upon Instructional Television series broadcast by public television. The student is responsible for viewing the series on the air and satisfying all course requirements.

PARK RESOURCES AND LEISURE SERVICES (PLS)

- 500 Leisure and Aging. 3 hrs.**
A course presenting an overview of leisure services for the elderly. Topics include research results, theories, and modern day trends. A wellness model will be included.
- 501 Administration of Parks and Recreation. 3 hrs.**
Considers administrative practice and various organizational structures. Includes administrative processes, supervision of personnel, budgeting, and public relations. Requires conducting a case study of an existing park and recreation department, including fiscal and personnel policies and an analysis of the effectiveness of such policies.
- 502 Assessment and Evaluation in Recreation and Leisure Services. 3 hrs.**
Theoretical and practical approach to evaluation as applied to recreation and leisure services. Emphasis will be upon developing sound assessment and evaluation methodology applicable to recreation and leisure studies. (PR: PLS 101 or permission)
- 510 Recreation Area and Facility Maintenance. 4 hrs.**
A study of the knowledge and skills necessary to supervise and administer the general development and maintenance of park and recreation areas and facilities.
- 511 Recreation Areas and Facilities. 3 hrs.**
Basic considerations in the planning and design of recreational and sport areas, facilities, and structures including associated amenities.
- 521 Recreation for Special Populations. 3 hrs.**
Study of the use of recreation activities with disabled persons. Techniques in programming and adaptation to meet the leisure needs of special groups in today's society. In association with a therapeutic recreation institution, student must develop a new/revised procedure for providing recreation programs at that institution. (PR: PLS 120 or permission)

- 522 Therapeutic Recreation in Institutional Settings. 3 hrs.**
Designed to acquaint students with the role and practice of therapeutic recreation in treatment centers. Requires preparation of an annotated bibliography of current literature in this field and conducting of a case study of therapeutic recreation programmatic offerings in such an institution. (PR: PLS 120 or permission)
- 530 Environmental Interpretation. 4 hrs.**
Principles and techniques of environmental interpretation as practiced in federal, state, and private agencies. Student must develop an interpretative brochure and evaluate both a facility and a program. 3 lec.-2 lab.
- 531 Forest Recreation Planning. 4 hrs.**
Utilizes the functional planning approach based upon demand and site capability analysis. Student conducts an in-depth recreation capability analysis in an existing park facility, presents this in written form; reviews the current literature on forest recreation development, and makes a final oral report. 3 lec.-2 lab.
- 540 Introduction to Off-Highway Vehicle Recreation. 3 hrs.**
A course designed to integrate off-highway vehicle recreation concepts, experiences, research trends, supply and demands, and management issues.
- 541 Planning, Design, and Construction of Off-Highway Vehicle Trail System. 3 hrs.**
Planning methodologies typically used by federal, state, and local governments. Includes assessment of resource and social value conflicts and partnership creation.
- 542 Operation and Management of OHV Trail Systems. 3 hrs.**
Diagnosis of OHV problems and development of solutions based upon recognized trail standards and typical resource impacts.
- 580-583 Special Topics in Recreation. 1-4; 1-4; 1-4; 1-4 hrs.**
Study of an advanced topic not normally covered in other courses. 3 lec.-2 lab. (PR: Permission of Chairman)
- 585-588 Independent Study. 1-4; 1-4; 1-4; 1-4 hrs.**
Requires conducting of individual survey/research projects beyond the requirements for undergraduates. Such projects will be individualized to meet the needs of students while accomplishing some practical need in the field. (PR: Permission)

PATHOLOGY (PTH)

- 620-621 Human Pathology. 7; 7 hrs., I, II.**
General principles of pathology, systemic pathology, and holistic integration with laboratory medicine and autopsy-clinical-and-cytologic material. (PR: Consent of instructor)

PHARMACOLOGY (PMC)

- 610 Introduction to Pharmacology. 3 hrs., I.**
An indepth presentation of the history and introductory principles of pharmacology. Designed to acquaint students with pharmacology as a scientific discipline and provide the basis for more advanced courses. (PR: Consent of instructor)
- 615 Pharmacology Reviews. 1 hr., I, II.**
A course designed for students to read and discuss recent and classic papers in pharmacological sciences. Students become acquainted with the pharmacology literature and classic advances in the field.
- 620 Medical Pharmacology. 8 hrs., II.**
An introduction to the basic concepts of drug actions and therapeutic principles governing drug therapy. Emphasis is placed on general mechanisms, therapeutic uses and toxicity of prototypic drugs. (PR: BIC 620, PHS 629 desirable; consent of instructor)
- 625 Drug Metabolism. 3 hrs., I.**
Topics will include a discussion of the metabolizing enzymes, enzyme induction and inhibition, toxic metabolites, prodrugs, metabolic disorders and analytical methods for studying drug metabolism. (PR: consent of instructor)
- 630 Chemical Aspects of Pharmacology. 3 hrs., I.**
An introduction to the chemical principles of pharmacology. The chemical classification, acid-base chemistry and stereochemical properties of drugs and the reactivity of drugs with biological systems will be discussed. (PR: organic chemistry, consent of instructor)
- 633 Vistas in Pharmacology. 3 hrs., I.**
A discussion and study of recent advances in the various fields of pharmacological investigation. This course is designed to acquaint students with state-of-the-art techniques and developing areas of pharmacology. (PR: PMC 620)

- 635 Neuropharmacology. 3 hrs., I.**
A study of the actions of drugs on the nervous system.
- 640 Behavioral Pharmacology. 3 hrs., I.**
Behavioral methods for assaying drug action. (PR: consent of instructor)
- 643 Introductory Cardiopulmonary Pharmacology. 3 hrs.**
A general overview of the principles of pharmacology and the mechanisms and effects of cardiovascular and respiratory drugs. (PR: PHS 629 or BSC 522, consent of instructor)
- 645 Advanced Cardiopulmonary Pharmacology. 3 hrs., I.**
An in-Depth presentation of pharmacological aspects of cardiovascular and pulmonary systems. Current knowledge, principles and methods used in cardiopulmonary research will be discussed. (PR: PMC 620 or PMC 643; consent of instructor)
- 650 General Toxicology. 3 hrs., I.**
An in depth presentation of the general principles and methods of toxicology. Mechanism, distribution and organ system responses to toxins and methods of toxicological evaluation will be discussed. (PR: PMC 620 or consent of instructor)
- 676-677 Special Topics. 1-4 hrs.**
Material on special areas of research of topics which are not routinely covered in existing courses.

PHILOSOPHY (PHL)

- 500 Ancient Philosophy. 3 hrs.**
Advanced study of major philosophers drawn from the ancient Greek and Roman period.
- 501 Modern Philosophy. 3 hrs.**
Advanced study of major movements in philosophy from the 17th century on, including movements such as rationalism, empiricism, idealism, and existentialism.
- 520 Metaphysics. 3 hrs.**
A study of what Aristotle called "first philosophy" or the study of being, later called metaphysics.
- 521 Philosophy of Knowledge. 3 hrs.**
Advanced study of the nature and possibility of knowledge.
- 551 Philosophy of History and Culture. 3 hrs.**
Ancient and modern theories of the meaning and consequence of history and culture.
- 553 Philosophy of Science. 3 hrs.**
Crucial concepts in modern science relevant to contemporary philosophical issues concerning man and the universe; special attention to epistemological and ethical implications of natural law, induction, mathematical theory and the new physics.
- 555 Philosophy of Religion. 3 hrs.**
Theories of the nature and functions of religion, including the meaning of religious language and problems of belief.
- 560 Philosophy of Politics and Power. 3 hrs.**
Advanced study of the significance or the place in human reality of political organization, negotiation, strategy, and power.
- 563 Philosophy of Feminism. 3 hrs.**
An introduction to contemporary feminist theory including discussion of current gender-related issues.
- 565 Existential Philosophy. 3 hrs.**
A survey of the contributions of leading existentialist philosophers of the past and present from Kierkegaard and Nietzsche to Sartre and Tillich; course is conducted much like a seminar.
- 570 Philosophy of Logic. 3 hrs.**
Advanced study of the nature of logic; whether logic is possible at all, how far it applies, and whether and how there can be conflicting logics.
- 580-583 Special Topics. 1-4; 1-4; 1-4; 1-4 hrs.**
- 585-588 Independent Study. 1-4; 1-4; 1-4; 1-4 hrs.**
- 598 Directed Readings in Philosophy. 3 hrs. I, or II.**
Advanced research adaptable to the needs of students. Regular consultations with the chairman and staff.
- 599 Humanities Seminar. 3 hrs.**

PHYSICAL EDUCATION (PE)

- 501 Ethics in Sport. 3 hrs.**
Philosophical and historical background to the development of values in contemporary society and examination of how these are manifested in the sports world.

- 516 Planning & Developing HPER & Athletic Facilities. 3 hrs.**
A course designed to familiarize students with the basic concepts of facility planning and construction. Current trends and innovative designs are reviewed. (Does not fulfill state certification requirements for a superintendent's license.)
- 524 Sport and Physical Education in the Twentieth Century United States. 3 hrs.**
The development of recreation, organized sport and physical education programs in the United States, 1900 to present.
- 525 Sport and Film. 3 hrs.**
The relationships between sports and feature motion pictures are analyzed in the historical, social, and cultural contexts.
- 530 Sport Law, 3 hrs.**
The study of the basic principles of the legal system as they operate in the environment of American sport.
- 560-564 Professional Development. (Plus title that identifies content). 1-4; 1-4; 1-4; 1-4 hrs.**
Courses and activities designed to meet the specific inservice needs of public school personnel. Credit in these courses may be used for certificate renewal and salary upgrading if approved but not for degrees. CR/NC grading.
- 575 Seminar in Sports Management and Marketing. 3 hrs.**
This course is designed to provide students with an overview of all aspects involved in the Sports Management and Marketing field through classroom lectures, guest speakers, and field trips.
- 576 Theoretical and Practical Aspects of Coaching. 3 hrs.**
An indepth study of the principles and problems of coaching.
- 578 Energy Sources, Body Composition and Performance. 3 hrs.**
Consideration of the energy sources and requirements for various types of physical activity as well as the impact that physical activity can have on body composition and performance. (PR: PE 621 or permission)
- 580-583 Special Topics. 1-4; 1-4; 1-4; 1-4 hrs.**
(PR: Approval by the department chairman, instructor and student's committee)
- 585-588 Independent Study. 1-4; 1-4; 1-4; 1-4 hrs.**
- 593-594 Workshop in Physical Education. 1-3 hrs.**
- 601 Advanced Exercise Testing. 3 hrs.**
Exercise testing techniques presented to determine the biological responses to exercise stress and to investigate the physiological limitations to human performance as it relates to disease and/or sport performance. (PR: PE 621)
- 615 Legal Concern in PE and Athletics. 3 hrs.**
An indepth analysis of the legal implications of Sports and Physical Education.
- 621 Scientific Aspects of Physical Education. 3 hrs.**
The study of the scientific basis for physical activity. Consideration will be given to the psychological, sociological, neuromuscular, and physiological characteristics requisite to physical activity. (REC: PE 201 and 345 or equivalent)
- 624 Issues in Physical Education. 3 hrs.**
Critical selection and analysis of current controversies in physical education. Analysis includes identification of the content fostering each issue and the systematic probing of administrative tenets and philosophical positions taken by all factions. Attempts at resolution are secondary to exploration and analysis of viewpoints.
- 626 History and Philosophy of Physical Education and Sport. 3 hrs.**
An investigation of historical events, political and social climates, and personalities as well as philosophies which have influenced physical education and sport from early civilizations to the present.
- 631-634 Performance Techniques and Analysis. 3 hrs.**
Analysis of lead-up, intermediate and advanced techniques of a selected team, individual or dual sports. Emphasis given to mechanics of performance psychological stress components, psychological factors, strategies and teaching/coaching methodology.
- 636 Structural Kinesiology. 3 hrs.**
Instruction and laboratory experiences involving musculoskeletal anatomy and biomechanics as applied to human movement.
- 642 Devising and Implementing Training and Conditioning Programs. 3 hrs.**
Application of neuromuscular and physiological knowledge to the examination of the administration and content of existing exercise programs as well as the development of new programs. (PR: PE 621)
- 643 Sport in the Social Process. 3 hrs.**
An indepth analysis of the processes by which sport evolved as a significant component of modern American life.
- 651 Mechanical Analysis of Motor Skills. 3 hrs.**
Analysis of motor skills through the application of the principles of physics. (REC: PE 321 or equivalent)

- 652 Administrative Theories in Physical Education and Athletics. 3 hrs.**
The student is introduced to the background and development of administrative theories in physical education and athletics in a context of a social scientific milieu.
- 654 Contemporary and Comparative Physical Education. 3 hrs.**
A study of objectives, methods, personnel, facilities, and program uniqueness of the physical education of selected nations and world regions. National sport programs, international sport programs and competition, and international professional organizations are considered.
- 670 Research in Physical Education. 3 hrs.**
An examination of experimental research design, laboratory methods, construction of instruments, execution of research, and presentation of research papers with an emphasis on science.
- 675 Advanced Sport Marketing. 3 hrs.**
Advanced level of marketing concepts in the sport industry.
- 681 Thesis. 1-6 hrs.**
- 682 Health Promotion, Disease Prevention, and Rehabilitation: Clinical Perspectives. 3 hrs.**
Examines disorder/disease prevalent in Westernized societies, with special emphasis on the rationale for intervention with exercise, nutrition, behavioral, and related strategies. (PR: PE 621)
- 683 Cardiovascular Assessment. 3 hrs.**
Considers cardiovascular assessment strategies, including EKG interpretation, related medical profile variables, patient/client/athlete screening and risk stratification. (PR: PE 621)
- 684 Developing Exercise, Nutritional, and Behavioral Prescriptions. 3 hrs.**
Examines prescription strategies for lifestyle intervention. This includes exercise, nutrition, medications, stress management, and smoke cessation. (PR: PE 621, 682, 683)
- 685 Development and Administration of Preventive and Rehabilitative Medical Programs. 3 hrs.**
Examines health promotion, disease prevention, and rehabilitation program development and administration strategies in the commercial, corporate, clinical, and community settings. (PR: PE 621, 682, 683, 684, 687).
- 686 Behavioral Aspects of Wellness, Disease, Rehabilitation. 3 hrs. I or II.**
Survey course to include the pathophysiology of stress, psychology of health, behavioral modification, neuromuscular relation/stress reduction techniques, program compliance improvement, and health counseling. (PR: PE 641)
- 687 Cardiac Life Support. 3 hrs.**
Course is designed to acquaint the student with the current methods in recognizing and treating cardiac conditions. (PR: PE 683 or permission)
- 696 Seminar in Physical Education. 3 hrs.**
A course designed for library research and discussion of critical questions in physical education. Topics to be selected will vary according to the interests of the students.

PHYSICAL SCIENCE (PS)

- 500 Astronomy. 3 hrs.**
A study of the stars and planets and galaxies, planetary motion, cosmology and cosmography. Designed to assist teachers and others to develop an interest in astronomy. (PR: PHY 101 or 203 or PS 109 or equivalent)
- 500L Astronomy Laboratory. 1 hr.**
Fundamental observations in astronomy and their interpretation through physical laws. Quantitative discussion of orbital motion, time, telescopes, solar system, stars, galaxies, and limited opportunity for astronomical observation. (PR or CR: PS 500)
- 510 Physical Principles of Remote Sensing with Applications. 4 hrs.**
A study of the physical systems for collecting remotely sensed data. Statistical/spatial analysis and modeling using image processing/geographic information/spatial analysis computer software systems with earth resource applications. (PR: PHY 203 and 204, MTH 225, or permission)
- 511 Digital Image Processing and Computer Simulation Modeling. 4 hrs.**
A study of image processing/geographic information and spatial analysis hardware/software systems, concurrent and parallel image processing modeling scenarios utilizing geobiophysical data for computer simulation modeling and practicum. (PR: PS 410/510 or permission)
- 525 Development of Scientific Thought. 3 hrs.**
A study of the people and ideas which have influenced science; the philosophy of their periods; the economic conditions leading to scientific advancement and the works of the foremost scientists in the field. (PR: A total of twelve hours in Physical Science, Physics, and Chemistry courses)
- 570 Practicum. 4 hrs.**
Problem solving, geobiophysical modeling, and proposal development techniques in the physical sciences. (PR: PS 411, 511 or Permission)

- 580-583 Special Topics. 1-4; 1-4; 1-4; 1-4 hrs.**
585-588 Independent Study. 1-4; 1-4; 1-4; 1-4 hrs.
646 Seminar on Recent Developments in the Physical Sciences. 3 hrs. Offered on demand.
648 Modern Physics for Teachers. 3-5 hrs. Offered on demand.
 A course designed to provide additional background material in atomic and nuclear physics for teachers. Lecture and laboratory.
649 Electronics for Teachers. 3-5 hrs. Offered on demand.
 A course in basic theory of electronics for teachers. Lecture and laboratory.
681 Thesis Research. I, II, S. 1-6 hrs.
 (PR: Graduate status and approval of advisor)

PHYSICS (PHY)

- 505 Optics Laboratory. 2 hrs.**
 A course in optical experiments encompassing geometrical and physical optics. This course is to be taken with Physics 304.
- 512 Atmospheric Physics with Computer Simulation Modeling. 3 hrs.**
 A general introduction to the earth's atmosphere. The physical and chemical dynamic behavior of the earth's atmosphere will be analyzed by comparing computer simulated profiles with in situ measurements.
- 515 Electronics Laboratory. 2 hrs.**
 A course in laboratory measurements encompassing transistors, integrated circuits, and their associated circuits. This course is to be taken with Physics 314.
- 521 Modern Physics Laboratory. 2 hrs.**
 Laboratory exercises on modern physics topics encompassing both experiments of historic significance and current applications. To be taken with Physics 320, or equivalent.
- 542 Quantum Mechanics. 3 hrs.**
 Alternate years. Mathematical formalism of quantum mechanics, particles in potential fields, perturbation theory and other approximation methods, scattering, applications to simple systems. 3 lec. (REC: PHY 331 and MTH 335 or equivalent)
- 545 Mathematical Methods of Physics. 3 hrs.**
 Offered on demand. An introduction to the theory of orthogonal functions, curvilinear coordinate systems, vector and tensor fields and their applications in Physics. Problems are drawn from different areas of physics. 3 lec. (PR: PHY 203.)
- 547 Mechanics for Teachers. 4 hrs.**
 An in-depth study of mechanics for education majors specializing in physics with emphasis on problem solving techniques, demonstrations, experiments and computer applications. (PR: PHY 203, MTH 122, MTH 140)
- 550 Radiation Physics in the Life Sciences. 4 hrs. II.**
 Alternate years. A course in radiation physics with emphasis on applications in the medical sciences. Designed for students interested in the life sciences. A field trip to the University of Michigan nuclear reactor is an integral part of the course. 3 lec-2 lab/demonstration. (PR: PHY 203 and 204, or consent of instructor)
- 562 Nuclear Chemistry and Physics. 3 hrs. II.**
 Alternate years. An introduction or the description of nucleons, electric and magnetic properties of a nucleus, nuclear energy levels, nuclear reactions including neutron activation, interaction of particles with matter, and nuclear forces. 3 lec. (PR: PHY 320 and MTH 231 or consent of instructor). See 424d.
- 563 Nuclear Physics Laboratory. 2 hrs.**
 Laboratory techniques for the measurement of nuclear properties, theory and characteristics of various detectors, statistics of counting, and energy determination of nuclear particles and radiation. This course is to be taken with Physics 462/562. A field trip to the University of Michigan Nuclear Reactor is an integral part of the course.
- 580-583 Special Topics. 1-4; 1-4; 1-4; 1-4 hrs.**
585-588 Independent Study. 1-4; 1-4; 1-4; 1-4 hrs.
616 X-Ray Diffraction. 3 hrs.
 Offered on demand. A study of the properties of X-rays, X-ray diffraction, and crystal structure. 2 lec-3 lab. (REC: CHM 358 or equivalent)
- 631-632 Seminar. 1; 1 hr. I, II.**
- 640 Fundamentals of Physics. 4 hrs. S.**
 Offered on demand. A course in fundamental concepts of physics. Subject content varies. Designed primarily to strengthen conceptual understanding of teachers.
- 644 Atomic Physics. 3 hrs.**
 A historical development of the modern theories concerning the structure of matter, electricity, and light, including applications of optical spectra and X-rays. (PR: PHY 203, 204 or PHY 213, 204 or equivalent)

- 661-662 Special Topics. 1-3; 1-3 hrs.**
682 Thesis Research. 1-6 hrs. I, II, S.
 (PR: Graduate status and approval of advisor)

PHYSIOLOGY (PHS)

- 628 Mammalian Neurophysiology. 2 hrs.**
 This course is a basic introductory, survey course covering neurophysiology from subcellular level to behavioral level. (PR: Consent of instructor)
- 629 Mammalian Physiology. 6 hrs. II.**
 A study of mammalian systems including pulmonary, renal, cardiovascular, gastrointestinal, endocrine and reproductive systems. Emphasis will be placed on homeostatic mechanisms and on experimental approaches to physiology. (PR: PHS 628)
- 630 Experimental Physiology. 1 hr. II.**
 A laboratory course in mammalian physiology which includes instruction in surgical preparation, bioinstrumentation technique and open-chest surgery in dogs. (PR: PHS 629 and consent of instructor. This course may be taken concurrently with 629)
- 631 Physiology Practicum. 2 hrs. II.**
 Experience in laboratory instruction of medical and graduate students in the mammalian physiology laboratory. (PR: PHS 630 and consent of instructor)
- 632 Physiology of Sleep. 1 hr.**
 Detailed examination of changes in EEG, EMG, cardiorespiratory function and ocular motility during sleep. (PR: PHS 628, 629)
- 634 Advanced Neurophysiology. 1-2 hrs., I.**
 Bioelectric potentials. A.C. and D.C. potentials, transcortical potentials, E.E.G., cornea-retinal potential, blood-CSF potential, etc. (PR: PHS 628, 629)
- 638 Advanced Cardiovascular Physiology. 1-2 hrs., I.**
 (PR: PHS 629)
- 639 Neurophysiology Research Techniques. 3 hrs.**
 Class participants will be exposed to state-of-the-art neurophysiology research techniques while in the laboratories of neurophysiology faculty.
- 640 Advanced Renal and Electrolyte Physiology. 1-2 hrs., I.**
 (PR: PHS 629)
- 641 Recent Advances in Physiology. 1 hr., I., II.**
 Recently published articles in a selected area of physiological investigation will be presented by participants in the class. Each presentation will be followed by a discussion and evaluation of the paper. (PR: Consent of instructor)
- 661 Endocrinology. 3 hrs.**
 An in depth study of the endocrine system with special emphasis on the role of experimentation in the development of concepts in endocrine physiology (PR: BMS 600 or equivalent, consent of instructor)
- 666 Physiology of the Cell. 3 hrs.**
 An in-depth study of selected topics in cell physiology.
- 675 Special Topics. 1-4 hrs.**
 Present course material on special areas of research of topics which are not routinely covered in existing courses.
- 676 Special Topics. 1-4 hrs.**
 Present course material on special areas of research or topics which are not routinely covered in existing courses.
- 677 Special Topics. 1-4 hrs.**
 Present course material on special areas of research or topics which are not routinely covered in existing courses.

POLITICAL SCIENCE (PSC)

- 505 International Organization. 3 hrs.**
 Study of world and regional organizations as reflections of world politics, as instruments of foreign policies, and as forces for change and order, with emphasis on their role as channels for management of cooperation and conflict.
- 506 International Politics. 3 hrs.**
 Study of major issues in world politics, with emphasis on theoretical approaches, problems of war and peace, and contemporary trends.
- 507 Asian Politics. 3 hrs.**
 Study of such nations as India, China, Japan, and Korea in the contemporary setting.

- 508 Middle Eastern Politics. 3 hrs.**
Study of the Arab States and such nations as Israel, Iran and Turkey in the contemporary setting.
- 509 Western Democratic Politics. 3 hrs.**
Study of such nations as Canada and those of Western Europe, particularly Great Britain and France.
- 510 Eastern European Politics. 3 hrs.**
Study of Russia and Eastern Europe.
- 511 Latin American Politics. 3 hrs.**
This course studies Latin American politics by sectors, such as landed elites, the military, the church, etc. Various styles of governance are considered. Case examples illustrate concepts discussed.
- 515 International Law. 3 hrs.**
Study of theories, origins, sources, development, present state, and trends of international law as a factor in various aspects of international politics.
- 520 Current World or Regional Issues. 3 hrs.**
An intensive study of specific world or regional problems, such as the politics of world hunger. The role of multinational corporations, imperialism, third world communist movements, etc.
- 521 American Political Thought. 3 hrs.**
Study of the development and influence of American Political Thought with an emphasis on the linkage of ideas to political and economic forces.
- 522 African Political Systems. 3 hrs.**
The study of political systems of selected countries, blocs or regions.
- 523 American Foreign Policy. 3 hrs.**
The study of descriptive, analytical, and normative aspects of American foreign policy with emphasis on contemporary problems and issues.
- 524 Comparative Foreign Policy. 3 hrs.**
Application of the comparative method to foreign policy decision-making and outputs. Comparisons within or between geographic regions.
- 525 Ancient Medieval Political Thought. 3 hrs.**
Selective study of classics of Western political theory from earliest times through the 15th century, such as that of Plato, Aristotle, the Romans, Augustine, and Aquinas.
- 526 Modern Political Thought. 3 hrs.**
Selective study of classics of Western political theory from the 16th century through the 19th century, such as that of Machiavelli, Bodin, Hobbes, Locke, Rousseau, Hume, Burke, Mill, and Marx.
- 527 Shapers and Definers. 3 hrs.**
A study of political leaders who have shaped and defined the American constitutional tradition.
- 528 Islamic Political Ideas and Institutions. 3 hrs.**
A study of Islamic political ideas, practices and institutions and their impact on the rise and development of contemporary Islamic movements, organizations and states.
- 529 The Politics of Conflict and Revolution. 3 hrs.**
Study of major theories of conflict and revolution with emphasis on cross-national explanations and outcomes.
- 533 Public Administration and Policy Development. 3 hrs.**
An examination of alternative theoretical approaches to the study of policy and administration and their implications for the use of policy to shape administrative practice.
- 536 The American Judiciary. 3 hrs.**
Structure and behavior in American national and state judicial systems, including analysis of their decision making and policy making functions, their procedures and administration, and problems and trends.
- 540 Power in American Society. 3 hrs.**
An examination of some of the major theoretical approaches-pluralist, elitist, etc.-to the study of power. A major concern is on the relationship between the distribution of political resources and the performance of political systems. Efforts to transform political systems are examined on the basis of cross-national research.
- 544 Dictatorship and Democracy. 3 hrs.**
An investigation of the strengths of democracies relative to dictatorships with regard to such dimensions as economic growth, income equality, health and welfare of citizens and war reduction.
- 546 Politics in History. 3 hrs.**
A study of politics as an order-shattering, order-restructuring force during some of America's most transformative moments.
- 550 Administrative Law. 3 hrs.**
A study of the basic legal framework of administrative organization, including the problems of administrative discretion, rule making and adjudication, regulatory agencies, and administrative responsibility in the democratic state. (PR: PSC 333)

- 552 **Public Personnel Administration. 3 hrs.**
Survey of Public Personnel Administration with particular attention on various facets of the merit system concept. Psychological and human relations aspects of the work situation and supervisor-subordinate interaction emphasized. (PR: PSC 333 or permission)
- 553 **Governmental Budgetary Administration. 3 hrs.**
Study of organization, administration, and accountability in the management of public funds, with emphasis on the political decision-making processes of budget formulation, presentation, and execution. (PR: PSC 333 or permission)
- 554 **Administrative Organization and Behavior. 3 hrs.**
A study of the contributions of the behavioral sciences to the study of organizations with stress on such concepts as leadership, motivation, power conflict, organizational design and decision making.
- 560 **Civil Rights and Liberties. 3 hrs.**
The basic substantive and procedural elements of American constitutional liberties and civil rights with emphasis on historical development as influenced by social and political forces.
- 561 **Urban Problems and Public Policy. 3 hrs.**
Study of policy problems of metropolitan areas in terms of structures, alternatives, and outcomes.
- 580-583 **Selected Topics. 1-4; 1-4; 1-4; 1-4 hrs.**
To offer a course on some special topic which is not adequately treated in the regular course offerings.
- 584 **Constitutional Law. 3 hrs. I.**
Introduction to the principles of American constitutional law and analysis of constitutional issues, emphasizing leading Supreme Court cases.
- 585-588 **Independent Study. 1-4; 1-4; 1-4; 1-4 hrs.**
These numbers are reserved for tutorials, directed and independent research, problem reports, etc.
- 600 **Research Design. 3 hrs.**
Philosophy of Science as applied to empirical political inquiry; elements of good research design, measurement theory, writing and critiquing research reports. (PR: PSC 211 or permission)
- 601 **Readings in Political Science. 2-3 hrs.**
Readings to meet the needs and interests of individual students.
- 604 **Data Analysis. 3 hrs.**
A study of quantitative methods used in empirical research with an emphasis upon applied statistical analysis; writing and critiquing research reports.
- 606 **Seminar in Judicial Politics. 3 hrs.**
- 609 **Seminar in International Relations Theory. 3 hrs.**
- 611 **Seminar in the American Legislative Process. 3 hrs.**
- 612 **Seminar in the American Executive Process.**
- 614 **Seminar in Comparative Politics. 3 hrs.**
- 618 **Seminar in Public Administration. 3 hrs.**
- 621 **Urban Administration. 3 hrs.**
Principles and methods of urban administration in the U.S.
- 622 **Constitutions. 3 hrs.**
A study of constitutions, their duration, distribution of power, contribution to a stable government and the rule of law. While the course is comparative, major emphasis is on the United States.
- 629 **Seminar in Political Thought. 3 hrs.**
- 648 **Seminar in State Government and Politics. 3 hrs.**
West Virginia government and political problems will receive special attention although other states may be considered.
- 650-651 **Seminar. 3-6 hrs.**
- 652 **Seminar in Political Behavior. 3 hrs.**
- 660 **Seminar in Policy Analysis. 3 hrs.**
Development of theoretical and methodological skills in the analysis of public problems and the use of policy in problem solving.
- 675 **Legislative Internship. 6 hrs.**
Intensive work experience in the West Virginia legislative processes coupled with a seminar involving directed reading Legislative Services with only selected students participating. (PR: One semester of graduate work and recommendation of department chairman.)
- 680 **Master's Essay. 3 hrs.**
- 681 **Thesis. 1-6 hrs.**

PSYCHOLOGY (PSY)

- 502 **Advanced Social Psychology. 3 hrs.**
Advanced study of selected topics in social psychology.

- 503 Applied Social Psychology. 3 hrs.**
Examination of the applications of social psychological methods, theories, principles and research findings to the understanding of social problems.
- 506 Psychometrics. 3 hrs.**
Mental test theory and applications.
- 508 Abnormal Psychology. 3 hrs.**
Study of the nature, causes and treatment of maladaptive human behavior.
- 515 Child Psychology. 3 hrs.**
Introduction to child development with major emphasis on normal growth and development. Specific topics include theories of child development and the biological, mental, emotional, social and cognitive growth and development of children.
- 516 Psychology of Learning. 3 hrs.**
Critical study of the major theories of learning and related research.
- 517 Intermediate Behavioral Statistics. 3 hrs.**
An intermediate level presentation of descriptive and inferential statistics as applied in behavioral research.
- 518 Psychology of Personnel. 3 hrs.**
Psychological principles and methods applied to functions in personnel administration.
- 519 Theories of Personality. 3 hrs.**
Discussion of theories of personality with attention given to major philosophies of science research and methodological problems in personality theory and research.
- 520 Introduction to Industrial-Organizational Psychology. 3 hrs.**
A systematic study of the application of psychological methods and principles in business and industry. Emphasis is on research methods, motivation, training, leadership, personnel selection, employee safety, and job satisfaction.
- 526 Cross Cultural Psychology. 3 hrs.**
Emic and etic cultural concepts are considered from an American (subcultural) and international perspective. Cultural influences on healing, health and service are covered.
- 527 Computer Applications in Psychology. 3 hrs.**
An introduction to computer applications in psychology, emphasizing data collection, management, organization, analysis and reporting.
- 533 Current Models of Psychotherapy. 3 hrs.**
Introduction to theoretical models and related therapeutic strategies which influence the practice of modern psychotherapy.
- 540 Physiological Psychology. 3 hrs.**
The relationships between physiological functions and biochemical processes and behavior.
- 543 Health Psychology. 3 hrs.**
Introduction to the contribution of psychology to the promotion and maintenance of health and the prevention and treatment of illness. (PR: PSY 201 & 323)
- 560 History and Systems of Psychology. 3 hrs.**
Overview of Psychology from historical perspective. (REC: 12 hours of psychology or equivalent)
- 580-583 Special Topics. 1-4; 1-4; 1-4; 1-4 hours.**
- 600 Teaching of Psychology. 3 hrs.**
A course designed to train psychology graduate students to teach a course in introductory psychology. (PR: Graduate status in Psychology and a minimum of 9 hours Psychology Graduate credit)
- 605 Ethical, Legal, and Professional Issues in Psychology.**
Introduction to ethical standards and issues, laws which influence psychological practice, and current challenges facing psychology as a profession.
- 608 Differential Diagnosis and Treatment Planning. 3 hrs.**
A course using the instruments and techniques of psychological clinical assessment to explore psychopathology with an emphasis on differential diagnosis and treatment planning. Students will become competent in the use of the diagnostic and statistical manual for classification of mental disorders and will be able to translate linguistic data into the goals and objectives of a treatment plan.
- 610 Assessment of Adults. 3 hrs.**
Principles and methods of psychological assessment for adults. Key issues in test construction, and training in report writing. (PR: Admission to Clinical Psychology area of emphasis or to Psy.D. program; CR: PSY 620)
- 611 Assessment of Children. 3 hrs.**
Principles and methods of psychological assessment for children. Key issues in test construction, and training in report writing. (PR: PSY 610; CR: PSY 621)

- 615 Advanced Developmental Psychology. 3 hrs.**
Psychological development from conception with a focus on major developmental principles, issues, and concepts. An introduction to conducting research with developmental topics and experience in applying basic developmental principles to work situations will be provided. (PR: PSY 515 or equivalent with permission of instructor)
- 616 Human Memory and Information Processing. 3 hrs.**
Theory and research relating to human learning, memory and decision processes. (PR: PSY 323 or equivalent)
- 617 Applied Developmental Psychology. 3 hrs.**
Application of research in developmental psychology to issues of causes of clinical problems, issues of parenting, and factors to be taken into account in interventions. (PR: Graduate status)
- 619 Psychotherapy with Children. 3 hrs.**
Discussion and analysis of the major theories of psychotherapy with children including psychoanalytic, client-centered, existential, and behavioral theories. Students will be expected to participate in an experiential component. (PR: admission to Clinical Psychology area of Emphasis, School Psychology program, or Psy.D. program or permission)
- 620 Assessment of Adults Practicum. 1 hr.**
Students will be expected to administer, score, interpret and write reports for a battery of tests used with adults. Must be taken concurrently with PSY 610.
- 621 Assessment of Children Practicum. 1 hr.**
Students will be expected to administer, score, interpret and write reports for a battery of tests used with children. Must be taken concurrently with PSY 611.
- 623 Experimental Design. 3 hrs.**
An introduction to the design and interpretation of behavioral research. Emphasis is upon tests of significance and assumptions governing their application. (PR: PSY 517 or equivalent)
- 624 Multivariate Analysis. 3 hrs.**
Multivariate analysis in behavioral research including multiple regression, analysis of variance, canonical correlation, and principal components and factor analysis. (PR: either PSY 623 or PSY 652)
- 627 Social Psychological Bases of Groups. 3 hrs.**
Examination of the dynamics of groups such as size, cohesion, leadership, norms and communication channels and their effects on the individual members; consideration of the impact of groups on the larger social structure.
- 630 Adult Diagnosis and Therapy. 3 hrs.**
Current diagnostic criteria for adult psychopathology, including prevalence, epidemiology and socio-cultural milieu; in-depth presentation of psychotherapy with adults, including psychodynamic, gestalt, crisis and other modalities. (PR: PSY 533 or equivalent, or permission; admission to clinical psychology area of emphasis)
- 633 Individual Psychotherapy and Interviewing. 3 hrs.**
An introduction to the basic skills and techniques used in treating various forms of psychopathology. (PR: Admission to Clinical Psychology area of emphasis or Psy.D. program)
- 634 Group Therapy. 3 hrs.**
Different types of group psychotherapy as appropriate for various forms of psychopathology. (PR: Admission to Clinical Psychology area of emphasis or Psy.D. program)
- 635 Child and Family Diagnosis and Therapy. 3 hrs.**
This course covers psychopathology, diagnosis and treatment of the major child and family disorders including childhood anxiety, depression, delinquency, parent-adolescent conflict, eating disorders, and others. (PR: Admission to clinical psychology area of emphasis, Psy.D. program, or permission)
- 650 Seminar in Performance Appraisal. 3 hrs.**
The course will offer students a research-based investigation of the performance evaluation process within work organizations. Emphasis is given to human rater x ratee x appraisal system features interactions (PR: Graduate standing in Psychology; or permission of the instructor)
- 651 Advanced Nonparametric Statistics. 3 hrs.**
An advanced survey of distribution-free statistical methods; dichotomous observations, one-sample tests, two sample tests for both independent and dependent observations, k-sample tests for both independent and dependent observations, ordinal correlational techniques, and relational measures. This course emphasizes both the theoretical constructs of distribution-free statistics and their application. Computer application of these techniques is stressed. (PR: PSY 517)
- 652 Advanced Regression Techniques. 3 hrs.**
Survey course of the theoretical development and application of multiple regression, advanced univariate correlational techniques, covariant analysis, and an introductory factor analysis. The course emphasis is on the application of these techniques to research and data analysis within the student's professional setting. Students will be expected to design and solve problems using computer-based models. (PR: PSY 517)

- 654 Single Subject Analysis. 3 hrs.**
Statistical analysis of small group designs as might be found in clinical and field situations. Emphasis will be on time series analysis and computer simulation of single subject and small group behaviors. (PR: PSY 517)
- 656-657 Research in Psychology. 1-3; 1-3 hrs.**
A laboratory course designed to give advanced students experience in all aspects of conducting psychological research. (PR: Permission of instructor)
- 670-671 Clinical Practicum. 1-3; 1-3 hrs.**
Supervised application of principles of therapy and evaluation in a clinical setting. CR/NR grading. (PR: PSY 611, 633 and consent of instructor)
- 672 Cognitive Psychology. 3 hrs.**
Theory and research findings in the process of learning/memory, attention, problem solving, decision making, concept formation and perception. Emphasis will be on the perceptual aspects of cognitive processes as they apply to psychological practices.
- 674 Biological Bases of Behavior. 3 hrs.**
A course designed to provide an understanding of the psychophysiological functions of the human organism as an operating entity in the environment. The areas to be covered include the basic characteristics of the nervous system and the internal physiological and biochemical environment; various models of genetic aberrations, stress, drugs and other physiological anatomical factors and their observed effects on behavior. Data will be drawn from experimental work on both human and infrahuman organisms. Both theoretical and applied aspects will be considered. (PR: 6 credit hours in biology or psychology)
- 675-679 Practicum in Teaching of Psychology. 1-3 hrs. CR/NC.**
Supervised teaching experience in introductory psychology, including development of lectures, classroom demonstrations, quizzes, tests, extra-credit activities and syllabi.
- 679 Testing in Industrial/Organizational Psychology. 3 hrs.**
An in-depth study of psychological and educational test theory and application. Emphasis is on classical test theory, constructs, and validation, including sources of variance in test scores and prediction of individual performance. Students will be expected to design, construct, and establish reliability and validity on a test as a class project.
- 680 Clinical Internship. 1-6 hrs. CR/NC.**
Placement in an approved mental health setting for minimum of 400 hours. Supervised by on-site personnel in addition to psychology faculty. CR/NC grading. (PR: completion of required clinical practicum sequence)
- 681 Thesis. 1-6 hrs. CR/NC.**
- 683 Internship in Industrial-Organizational Psychology. 3 hrs. CR/NC.**
This course will offer students applied observational/research experience in Personnel/Human Resource Departments under the supervision of professionals within the fields of Industrial-Organizational Psychology and Human Resources. CR/NC grading. (PR: Advanced standing and admission into the I/O degree program)
- 685-686 Independent Study. 3 hrs.**
- 690-695 Seminar. 1-3; 1-3; 1-3; 1-3; 1-3 hrs.**
Reports on current problems and literature in psychology and related fields; professional ethics. (PR: consent of instructor)
- 710 Advanced Psychological Assessment. 3 hrs.**
This course will offer coverage in advanced topics in psychological assessment. This topics will include geriatric assessment, assessment of addictions, neuropsychological screening, forensic assessment, and cross-cultural assessment issues. (PR: Admission to Psy.D. program or permission of instructor)
- 712 Geropsychology. 3 hrs.**
An examination of normal and abnormal processes of aging, including common social, cognitive, health and psychopathological problems, will be studied. Issues of community resources, assessment, and therapy will be discussed. (PR: Admission to Psy.D. program or permission of instructor)
- 723 Clinical Research Methods in Psychology. 3 hrs.**
This course will provide an overview in basic research methods and ethical issues prevalent in the field of clinical psychology. Use of research to document clinical outcomes will also be addressed.
- 731 Psychodynamic Therapy. 3 hrs.**
This course presents an overview of the theory underlying psychodynamic and insight-oriented psychotherapies, with an emphasis on brief/short-term interventions. Current empirical evaluation of insight therapy is covered. (PR: Admission to Psy.D. program or permission of instructor)
- 732 Behavior Therapy. 3 hrs.**
The course covers the methods of behavior therapy, including its use in treatment of common disorders such as depression, anxiety disorders, child conduct problems, and chronic illnesses such as schizophrenia. (PR: Admission to Psy.D. program or permission of instructor)

- 733 Cognitive Psychotherapy. 3 hrs.**
Introduction to the literature on and profession applications of cognitive approaches to psychotherapy. Readings, case discussions, demonstrations, and seminar interactions will be used throughout. (PR: Admission to Psy.D. program or permission of instructor)
- 750 Behavioral Health. 2 hrs.**
This course will provide an overview of common medical problems, and their related psychological issues. Adjustment issues, health behavior, family impacts, and medical compliance will also be discussed. (PR: Admission to Psy.D. program or permission of instructor)
- 752 Community Psychology. 3 hrs.**
This course presents an overview of the philosophy, issues, methods, and interventions of community psychology practice. Students will complete field projects as part of the experience. (PR: Admission to Psy.D. program or permission of instructor)
- 753 Supervision in Clinical Psychology. 3 hrs.**
Review of current supervision research and theory combined with opportunities for doctoral students to gain supervised experience in clinical supervision. (PR: Admission to Psy.D. program or consent of instructor)
- 755 Rural Psychology. 3 hrs.**
This course prepares students to undertake supervised practice in rural areas, including employment of appropriate research techniques and the design of culturally and economically effective interventions. (PR: Admission to Psy.D. program or permission of instructor)
- 764 Advanced Studies in Human Sexuality. 3 hrs.**
An examination of the knowledge and theory which explain important areas of sexual behavior. Topics emphasize sexual orientation, sexual dysfunctions, gender identity, paraphilias, and compulsive and coercive behaviors. (PR: Admission to Psy.D. program or permission of instructor)
- 769 Practicum in Clinical Psychology. 3 hrs.**
Supervised application of principles of therapy and evaluation in a clinical setting. (PR: Admission to Psy.D. program)
- 770-71 Advanced Practicum in Clinical Psychology. 3 hrs.**
Students provide supervised clinical services at an approved field site. (PR: Admission to Psy.D. program)
- 772-773 Rural Practicum I & II. 3 hrs.**
Supervised two-semester sequence providing field experience in rural mental health settings. (PR: Admission to Psy.D. program)
- 790-96 Seminar in Clinical Psychology. 1 hr.**
Seminars on current topics and issues of interest to clinical psychologists. Topics will change for each semester. Psy.D. program students are required to enroll for six semesters of seminars; check with advisor for details. (PR: Admission to Psy.D. program)
- 799 Doctoral Research. 3-9 hrs.**
Doctoral research project under the supervision of research committee and chair. (PR: Permission of program coordinator)

QUALITY ASSURANCE (QA)

- 635 Quality Control. 3 hrs.**
Application of statistical methods to quality control: process control charts and acceptance sampling plans by variables and by attributes. Process improvement techniques.
- 636 Reliability Estimation and Analysis. 3 hrs.**
Failure models and distributions, graphical methods of goodness-of-fit and parameter estimation, reliability measures for components and systems, fault trees, accelerated life testing, and censoring mechanisms.
- 650-653 Special Topics. 1-4 hrs.**
Special topics in quality assurance. (PR: Consent)
- 676 Quality Assurance. 3 hrs.**
Provides a technical overview of quality assurance and managerial implications. Management of total quality systems will be stressed. Concepts from statistical process control will be introduced. Quality costs and audits.

RELIGIOUS STUDIES (RST)

- 519 Religious Thought in the Western World. 3 hrs.**
An analysis of the major schools of religious thought as they have developed in the West.
- 550 Sociology of Religion. 3 hrs.**
An investigation into the nature of religion as a social phenomenon.

- 580-583 **Special Topics. 1-4; 1-4 hrs.**
 585-588 **Independent Study. 1-4 hrs.**
 599 **Humanities Seminar. 3 hrs.**

SAFETY TECHNOLOGY (SFT)

- 500 **Traffic Law Enforcement. 3 hrs.**
 A course designed to study and evaluate the varied and complex system of laws governing the control of all forms of human traffic law and enforcement on present and future societies.
- 505 **Introduction to Occupational Safety and Health. CR/NC. 1 hr.**
 Introduces students to the basic principles and emerging trends in the safety and health discipline. (All students [except safety majors] will be required to enroll.)
- 510 **Problems and Practices in Traffic Safety and Driver Education. 3 hrs.**
 A survey course for supervisors of traffic accident prevention programs. Examines and evaluates problems, attitudes, activities, and administrative practices in school, city, and state traffic safety programs. Supplements basic teacher training courses in driver education. (PR: SFT 235 and 385)
- 536 **Safety Education for Elementary Teachers. 1 hr.**
 Survey of accident prevention methods in the elementary school environment, with emphasis on elementary school safety curriculum, laws, personal protection and resources for elementary school teachers.
- 540 **Industrial Fire Protection. 3 hr.**
 An introductory course that explores the relationship between engineering and fire prevention. Topics include: water supplies, sprinkler systems, behavior of fire and materials, fire protection, fire extinguishers, and other systems.
- 550 **Traffic Engineering. 3 hrs.**
 Concerned with traffic and pedestrian flow, channelization, light coordination, intersection control, and devices as related to safe, convenient, and economical transportation of persons and goods.
- 553 **International Safety and Health. 3 hrs.**
 The course covers the impact of globalization on worldwide safety and health programs, and a wide variety of safety and health programs for various countries and multi-national organizations.
- 554 **Industrial Hygiene I. 3 hrs.**
 Environmental protection as related to industrial settings. Air/water quality, noise and chemical pollution and hazardous material control.
- 554L **Industrial Environmental Auditing/Programming. 2 hrs.**
 Concerns development of an industrial environmental protection program for a small plant, including workplace experience in sampling/measurement of contaminants. (PR: SFT 454, or 554 or 647)
- 558 **Hospital Safety. 3 hrs.**
 The course covers the various aspects of safety and health in professional health care services.
- 560 **Fundamentals of Ergonomics. 3 hrs.**
 Introduction to ergonomics with discussion of ergonomic issues in relevant office, industrial, and service work. Emphasis on anticipation, recognition, evaluation, and control of ergonomic stressors.
- 565 **Accident Investigation/Reconstruction. 3 hrs.**
 An introductory course in accident investigation designed to give insight into the recognition and collection of evidence, collection and recording data and reconstructing the accident based on the facts.
- 575 **System Safety Engineering. 3 hrs.**
 A study of the analytical tools used in the recognition, evaluation and control of exposure to hazards in industry. (PR: MTH 120 or higher)
- 580-583 **Special Topics. 1-4 hrs.**
 Occasional offerings of current topics in safety, providing important supplementary material for participating students.
- 585-588 **Independent Study. 1-4 hrs.**
 An approved study of special interest that is appropriate for the student's program of study concerning safety. Carried out under the supervision of a faculty member. (PR: Permission)
- 589 **Process Safety Management. 3 hrs.**
 A study of the latest industrial safety information which will assist the student in designing a program to reduce or eliminate all incidents which downgrade the system. (PR: SFT 565)
- 591-594 **Workshop. 1-4 hrs.**
- 597 **Occupational Safety and Health Program Development. 3 hrs.**
 Safety functions in industry. Principles of organization and application of safety programs. Prevention, correction, and control methods are outlined and evaluated.
- 599 **Occupational Safety Program Management. 3 hrs.**
 A study of safety programs at the state and local levels including the administrative, instructional, and protective aspects of a comprehensive safety program in schools, occupations, home and public.

- 601 Safety in Transportation. 3 hrs.**
Concerned with safe, efficient movement of people and goods. Involves highway, air, water, pipeline, and rails.
- 606 Field Experience for the Safety Specialist. 3 hrs.**
Concerned with the visitation and evaluation of the safety program of various agencies in the region.
- 610 Philosophical and Psychological Concepts of Occupational Safety and Health. 3 hrs.** An analysis of the educational philosophies and the application of these philosophies to occupational safety. A study of the effect of occupational safety on modern living.
- 630 Current Literature and Research in Occupational Safety and Health. 3 hrs.** An analysis and study of selected works of national and international authors concerning significant works in Occupational Safety.
- 645 Safety Engineering and Equipment Design. 3 hrs.**
The design and engineering of facilities and equipment to meet the physical needs of the human as well as enhancing production.
- 647 Industrial Hygiene II. 3 hrs.**
Concerned with environmental health and safety hazards that arise out of or occur during work of employees.
- 647L Quantitative Industrial Hygiene Lab. 3 hrs.**
A laboratory course designed to complement Industrial Hygiene. (CR: SFT 647)
- 648 Industrial Ventilation. 3 hrs.**
The course will cover the techniques of development, design, maintenance, and trouble shooting of industrial ventilation systems. Also the types of ventilation systems used for different types of toxic materials. (PR: SFT 647 or SFT 554 or permission)
- 649 Biophysical Hazards and Monitoring. 3 hrs.**
The course will cover sources of biological and physical hazards for various industries and occupations. Hazard controls and preventive techniques will also be covered.
- 650 Internship for the Safety Specialist. 3-12 hrs. CR/NC.**
Supervised experience on the job site. Involves the student working under safety personnel and analyzing and writing of experiences. (Permission)
- 651 Toxicology and Epidemiology. 3 hrs.**
The course will emphasize the principles of toxicology, dose-response relationships, xenotoxins, the distribution of toxins, and the storage of toxins. (PR: SFT 554 or SFT 647)
- 652 Industrial Noise and Vibration. 3 hrs.**
A study of the physical characteristics of noise and vibration, and its effects on the human body. (PR: SFT 554 or SFT 647)
- 660 Human Factors in Accident Prevention. 3 hrs.**
A study of the psychological principles and their applications to accident causation and prevention.
- 661 Advanced Occupational Ergonomics. 3 hrs.**
The study and application of occupational ergonomics to the design and evaluation of various work environments. (PR: SFT 660)
- 662 Methods in Work Analysis. 3 hrs.**
To study, utilize, and critique several existing ergonomic analysis methods for specific intended purpose, and provide directions for new methodologies. (PR: SFT 660)
- 663 Work Environment Issues. 3 hrs.**
An examination of the aspects of the work environment that can affect health: time pressure, machine pacing, control, etc. The recognition, measurement, and control of these factors will be discussed.
- 669 Traffic Safety Management. 3 hrs.**
Concerned with the total Traffic Safety Management Program, including vehicle registration, driver licensing, motorcycle driver education, and motor vehicle registration.
- 679 Problem Report. 1-3 hrs. (Permission)**
- 681 Thesis. 1-6 hrs.**
- 690-692 Seminar. 1-4 hrs.**

SCHOOL PSYCHOLOGY (SPSY)

- 523 Independent Research. 1-3 hrs.**
Coursework designed to provide the student with the opportunity to work with a School Psychology program professor on a research on a research problem mutually agreed upon in terms of a specific plan of study.
- 601 Professional Competence I: Schools. 3 hrs.**
Introduction to the roles and functions of school pupil personnel professionals, models of operation, problems, issues, and techniques. The organization and administration of school systems and philosophy of education are considered. Students may be expected to spend a minimum of one-half day a week observing in a local school.

- 603 Professional Competence II: Professional School Psychology. 3 hrs.**
Examination of current professional issues, theoretical model and research related to delivery of school-based psychological services. Examination of the variety of methodologies and strategies for children of diverse backgrounds and exceptionalities. (PR: SPSY 601 or concurrently with 601).
- 606 Adolescent Substance Abuse. 3 hrs.**
Substance abuse is a pervasive problem within our society. Mental health professionals and educators require knowledge and skills in adolescent substance abuse prevention, intervention, and treatment to address this problem.
- 616 Typical and Atypical Child Development. 3 hrs.**
Psychological development from conception with a focus on major developmental principles, issues, and concepts. An introduction to conducting research with developmental topics and experience in applying basic developmental principles to work situations will be provided.
- 617 Indirect Service Delivery I: School Consultation. 3 hrs.**
This course is an introduction to the theory and practice of consultation and will prepare students to serve as consultants within public schools.
- 618 Direct Service Delivery I: Instruction Methods and Behavior Modification. 3 hrs.**
This course teaches the application of behavior modification principles to the classroom setting as well as the modification of instruction to meet the needs of atypical learners.
- 619 Direct Service Delivery I: Individual and Group Counseling. 3 hrs.**
This course is a direct interventions course focusing on individual and group therapy for children. (PR: SPSY 616 or PSY 615)
- 620 Indirect Service Delivery II: Primary Prevention. 3 hrs.**
This course is an introduction to the science and practice of primary prevention.
- 621 Data-Based Decision Making I. 3 hrs.**
This course is a beginning problem-solving course designed to provide students with a variety of assessment methods they can use to start constructing their professional "tool kits."
- 622 Data-Based Decision Making II. 3 hrs.**
This course is an intermediate problem-solving course designed to provide students with a variety of assessment measures to add to their professional "tool kits."
- 624 Data-Based Decision Making III. 3 hrs.**
This course is an advanced problem-solving course designed to provide students with a variety of assessment methods to add to their professional "tool kits."
- 674 Biological Bases of School Psychology. 3 hrs.**
SPSY 674 is a 3-credit interactive and reading intensive course that uses both live class meetings and the WebCT format to present information on the biological foundations of school psychology.
- 675 Survey of Psychological Foundations of School Psychology. 3 hrs.**
PSY 675 is a reading and writing-intensive course that presents information on the psychological foundations of school psychology.
- 700 Special Topics. 1-6 hrs.**
Courses in specialized areas of school psychology on issues in the practice of school psychology.
- 738 School Psychology Practicum I. 3 hrs. CR/NC.**
The initial practicum in school psychology is designed to provide a structured, experiential link between early coursework and practical experience.
- 739 School Psychology Practicum II. 3 hrs. CR/NC.**
The second practicum in school psychology is designed to provide a structured, experiential link between intermediate coursework and practical experience.
- 740 School Psychology Practicum III. 3 hrs. CR/NC.**
Assessment behavior management and consultation experiences in a school setting, supervised by a certified school psychologist for 2 days per week. (PR: SPSY 734 or concurrent).
- 745 Internship in School Psychology. 1-12 hrs. CR/NC.**
Students may apply for permission to enroll for this course with the Coordinator of Field-Based Experiences. Students must request internship from the program faculty at least one semester in advance of their starting dates. This requires full-time experience for one school year or one half-time experience for two consecutive school years (minimum of 1200 clock hours). Each 1 hour credit requires 100 clock hours. The internship in School Psychology requires a contractual agreement between the school system, the university, and the student that outlines the responsibilities of each party. Students will be expected to assume the roles and responsibilities of functioning school psychologists in a school. (PR: SPSY 740)
- 750 Ed.S. Thesis Research. 3 hrs.**
Development and defense of a research proposal examining a specific hypothesis in School Psychology. Analysis of data, written presentation in thesis form, and public defense are required. (PR: 3 credit hours of 600-level statistics and approved prospectus)

SOCIOLOGY (SOC)

- 501 Population and Human Ecology. 3 hrs.**
The course focuses on population and its relation to characteristics of environment. Specifically, it is designed to discuss the interaction of population processes and resources.
- 503 Social Research II. 3 hrs.**
Intermediate social research methodology with emphasis on research design. 2 lec-2 lab. (Required of all M.A. candidates). (PR: SOC 344, 345 or equivalent)
- 508 The Family. 3 hrs.**
Theoretical analysis of the family as a primary social institution. (PR: SOC 200 or permission)
- 513 Social Movements and Social Change. 3 hrs.**
Analysis of large-scale social change, including intentional social movements and revolutions. (PR: SOC 200)
- 520 Criminology. 3 hrs.**
An overview of sociological criminology, including an examination of explanations of criminal behavior, types of criminal activity, and an analysis of the criminal justice system. (PR: SOC 200 and SOC 311 or permission)
- 521 Sociological Theory. 3 hrs.**
Examination of the emergence and development of theoretical orientations in Sociology. (PR: SOC 200)
- 523 Social Class, Power and Conflict. 3 hrs.**
Theoretical analysis of economic and political inequality and the role of social conflict in the process of large-scale social organization. (PR: SOC 200)
- 525 Race and Ethnicity. 3 hrs.**
Diverse theoretical approaches to the meaning of race and ethnicity and the character of racial/ethnic relations, with substantive focus primarily on the U.S. (PR: SOC 200)
- 528 Medical Sociology. 3 hrs.**
Social organization of modern medicine and allied health delivery systems. (PR: SOC 200 or departmental permission)
- 532 Sociology of Appalachia. 3 hrs.**
Study of the economics, politics, and social relations of Appalachia, including contemporary debates. (PR: SOC 200)
- 533 Industrial Sociology. 3 hrs.**
Study of the organization and structure of the workplant as a social system; the meaning and organization of work; managerial functions; management-labor relations; and human relations in industry. (PR: SOC 200 or permission)
- 535 Juvenile Delinquency. 3 hrs.**
A sociological analysis of juvenile crime, including a review of the origins of juvenile delinquency, an evaluation of causal theories, and an overview of the juvenile justice system. (PR: SOC 200 and SOC 311 or permission)
- 540 Introduction to the Sociology of Aging. 3 hrs.**
An introduction to the social processes and consequences of growing older for both the individual and society. (PR: SOC 200)
- 542 Urban Sociology. 3 hrs.**
The sociology of urban and metropolitan communities. (PR: SOC 200 or permission)
- 543 Evaluation Research. 3 hrs.**
Analysis and application of theories and methods for assessing the outcomes of applied organizational services and programs to affect change in people and for social conditions. (PR: SOC 200)
- 545 Social Statistics II. 3 hrs.**
Intermediate level statistical analysis, including analysis of variance and covariance. 2 lec-2 lab. (Required of all M.A. candidates). (PR: SOC 345 or equivalent)
- 550 Sociology of Religion. 3 hrs.**
An investigation into the nature of religion as a social phenomenon. (PR: SOC 200 or permission)
- 552 Sociology of Death & Dying. 3 hrs.**
The study of death and dying as a societal and cultural phenomenon. Explores how institutions within our society deal with death. (PR: SOC 200 or permission)
- 555 Sociology of Sex and Gender. 3 hrs.**
Analysis of social differentiation and inequality by gender, with a focus on the contemporary U.S. (PR: SOC 200)
- 564 Complex Organizations. 3 hrs.**
Analysis of complex organizations with special attention given to bureaucratic organization. (PR: SOC 200)
- 570-571 Sociological Field Experience. 3; 3 hrs.**
Supervised field work in a social organization or community working on practical problems. (PR: SOC 406 or 506 or permission)

- 580-583 Special Topics. 1-4; 1-4; 1-4; 1-4 hrs.**
Study of topics not covered in regularly scheduled courses. (PR: Graduate majors, SOC 200 or permission)
- 585-588 Independent Study. 1-4; 1-4; 1-4; 1-4 hrs.**
Individual study of topics not offered in regularly scheduled courses. (PR: For majors only; advance departmental permission is required)
- 597-598 Instructional Television Course. 1-4 hrs.**
A course based upon Instructional Television Series broadcast by public television. The student is responsible for viewing the series on the air and satisfying all course requirements announced by the department.
- 601 Advanced Sociological Theory. 3 hrs.**
Examination of current issues and controversies in Sociological theory. (PR: SOC 421 or SOC 521)
- 602 Contemporary Social Change. 3 hrs.**
Theories of social change and their uses in analyzing social change of today. (PR: SOC 200 or permission)
- 603-604 Behavioral Science I and II. 3; 3 hrs.**
Seminar in behavioral science theory. (PR: SOC 200 or permission)
- 615 Applied Demography. 3 hrs.**
The focus of this course is to study the application of the principles and methods of demography to decision making and planning problems in both public and private setting. (PR: SOC 200 or permission)
- 620 Criminology. 3 hrs.**
Seminar in crime and delinquency. (PR: SOC 200 or permission)
- 640 Problems and Prospects for an Aging Society. 3 hrs.**
Seminar in current and anticipated social consequences of aging for individuals and society and societal responses to this process. (PR: SOC 200 or permission)
- 655 Feminist Social Theory. 3 hrs.**
Diverse theoretical perspectives on the origins and nature of gender, inequality. Emphasis on contemporary debates and their political implications. (PR: SOC 200 or permission)
- 668 Seminar. 1-3 hrs.**
Topics vary from semester to semester. (PR: SOC 200 or permission)
- 679 Problem Report. 1-3 hrs.**
The preparation of a written report on a research problem or field study in sociology under direction of member of graduate faculty. (PR: Departmental permission)
- 681 Thesis. 1-6 hrs. I, II, S.**
Individual research in a selected field of sociology under the direction of a graduate faculty member of the department. (PR: Admission to candidacy and staff approval of thesis proposal.)

SPANISH (SPN)

- 505 Pedagogy and Instructional Experience in the Middle School. 3 hrs.**
Students plan and deliver beginning Spanish instruction to middle school students.
- 506 Composition, Conversation, and Introduction to Hispanic Literature. 3 hrs.**
Continuing supervision of students' teaching experiences. Continued attention to advanced grammar concepts, composition and conversation, and reading proficiency with an emphasis on the introduction of Hispanic literature.
- 510 Spanish Literature from the Cid Through the 17th Century. 3 hrs.**
On demand. Readings, lectures, reports and discussions of significant literary works from the Cid through the 17th century. (PR: 6 hours of literature numbered 318 or above or equivalent)
- 560 The Modernist Movement. 3 hrs. S.**
The precursors of the Modernist Movement, its chief exponents, and its influence on the literature of Spanish America and Spain. Readings, lectures, discussions, and reports in Spanish. (PR: 6 hours of literature numbered 318 or above or equivalent)
- 561 Advanced Syntax and Stylistics. 3 hrs. S.**
A detailed analysis of Spanish syntax and shades of meaning with the writing of original compositions in Spanish to perfect the student's own style. (PR: SPN 204 or equivalent)
- 580-583 Special Topics. 1-4; 1-4; 1-4; 1-4 hrs.**
- 585-588 Independent Study. 1-4; 1-4; 1-4; 1-4 hrs.**
Independent research in selected areas of Spanish and Spanish American literature that are not available in other courses in the catalog. The student has the opportunity to become familiar with leading authorities and bibliographies. Conferences and reports in Spanish. (PR: 6 hours of literature numbered 318 or above or equivalent and permission of instructor)

- 610 Readings in Spanish or Spanish American Literature. 1-3 hrs.**
Readings designed for the graduate student who has the interest and the ability to study in depth a certain author, genre, or literary movement. (PR: 6 hours of literature numbered 318 or above or equivalent and permission of instructor)
- 612 Spanish-American Romanticism. 3 hrs.**
Leading writers and trends in thought and versification of the romantic period. (PR: 6 hours of literature numbered 318 or above or equivalent)
- 620 Spanish Romanticism. 3 hrs.**
The trends and characteristics of the romantic period in the writings of its leading exponents in lyric poetry, non-dramatic prose, and the theatre. (PR: 6 hours of literature numbered 318 or above or equivalent)
- 625 Spanish Literature of the Twentieth Century. 3 hrs.**
Emphasis on prose, poetry and the theatre since 1936, including writers in exile. (PR: 6 hours of literature numbered 318 or above or equivalent)
- 679 Problem Report. 1-3 hrs. (PR: Permission)**
- 681 Thesis. 1-6 hrs. (PR: Permission)**

SPECIAL EDUCATION
(See Curriculum and Instruction)

SPEECH
(See Communication Studies)

SPEECH PATHOLOGY
(See Communication Disorders)

TECHNOLOGY AND ENGINEERING (TE)

- 580-83 Special Topics. 1-4 hrs.**
Occasional offerings of current topics in technology and engineering, providing important supplementary material for participating students.
- 585-88 Independent Study. 1-4 hrs.**
An approved study of special interest concerning technology and engineering that is appropriate for the student's program of study. Carried out under the supervision of a faculty member.
- 650-53 Special Topics. 1-4 hrs.**
Occasional offerings of current topics in technology and engineering, providing important supplementary material for participating students.
- 685-88 Independent Study. 1-4 hrs.**
An approved study of special interest concerning technology and engineering that is appropriate for the student's program of study. Carried out under the supervision of a faculty member.
- 698 Comprehensive Project Formulation. 3 hrs. S/U.**
Comprehensive project proposal is developed and approved, and work begun under supervision. Technical report writing, oral presentations, and communication skills. (PR: EM 660 and have completed min. 18 hours toward degree)
- 699 Comprehensive Project. 3 hrs. S/U.**
Completion of comprehensive project under the supervision of a faculty member. Includes final written submittal and public oral presentation. (PR: TE 698 and have completed minimum 27 hours toward degree)

TECHNOLOGY MANAGEMENT (TM)

- 600 Program Introduction Seminar. 1 hr.**
This course reviews fundamental mathematical and statistical methods, presentations, report writing, group project skills, and use of case studies. An orientation and overview to the degree program are also provided. (PR: Full Admission to TM program, or permission of TM Program Director)
- 610 Technology and Innovation Management. 3 hrs.**
Provides a comprehensive introduction to technology and innovation management. Considers issues relating to international markets, innovation, and rapidly changing technology. Also covers effective organizational and managerial approach to technology. (PR: Full Admission to TM program, or permission of TM Program Director)

- 612 Economic and Financial Analysis for Technology Management. 3 hrs.**
Tools and techniques for financial analysis, cost estimation, budgeting, and control, for technology-oriented projects and organizations. Includes financial statements, economic analysis, reporting, and life-cycle costing and control principles. (PR: TM 610 or permission of Program Director)
- 615 Information Technology Strategies. 3 hrs.**
This course provides sound principles for managing information technology-computers and telecommunication systems - as well as the processes and procedures for applying the principles. (PR: TM 610 or permission of Program Director)
- 620 Technology Planning. 3 hrs.**
Methods of technology planning, strategic management, and forecasting for use in technology intensive organizations are discussed, including technology life cycles and strategies for commercializing products. (PR: TM 610 or permission of Program Director)
- 630 Quality and Productivity Methods. 3 hrs.**
Study of quality and productivity improvement methods with emphasis on applications to knowledge worker organizations. Examines total quality management, and personal and organizational productivity improvement processes. (PR: TM 610 or permission of Program Director)
- 640 Intelligent Transportation Systems. 3 hrs.**
Overview of transportation telemetrics and introduction to intelligent transportation systems. Communications and computing technologies in transportation. Overview of issues: traffic safety, public transportation.
- 650-653 Special Topics. 1-4 hrs.**
Occasional offerings of current topics in technology management, providing important supplementary material for participating students. (PR: Full Admission to TM program or permission of TM Program Director)
- 660 Computing and Information Systems Technologies. 3 hrs.**
Provides a broad understanding of computing and information systems technologies with emphasis on development, current trends, strategic and tactical management, and legal and regulatory issues. (PR: TM 615 or permission of Program Director)
- 685-688 Independent Study. 1-4 hrs.**
An approved study of special interest concerning technology management, under the supervision of a faculty member. (PR: Full Admission to TM program, or permission of TM Program Director)

THEATRE (THE)

- 510 Playwriting. 3 hrs.**
Study of dramatic structure, characterization, dialogue, themes, sounds, and spectacle, including the writing of one-act plays. (PR: THE 101 or permission of instructor.)
- 520 Acting for the Musical Theatre. 3 hrs.**
Analysis of musical scripts; study of spoken and musical scenes; staging musical numbers; and preparation of audition material. (PR: THE 222)
- 521 Acting for the Camera. 3 hrs.**
Projects in acting for the camera. Video taping of selected acting exercises. (PR: THE 222)
- 523 Stanislavsky System of Acting. 3 hrs.**
Study of the Stanislavsky System of Acting and using it in preparing and performing excerpts from plays.
- 536 Children's Theatre. 3 hrs.**
Theory, direction, and staging of plays for children.
- 537 Directing I. 3 hrs.**
Introduction to theories, principles, techniques, and history of directing. (PR: THE 150, 151, 152, and 222)
- 538 Directing II. 3 hrs.**
In-depth study of directorial approaches. Analysis of contemporary movements and leaders in the field. Students must stage productions as part of class requirement. (PR: THE 537 or permission of instructor)
- 539 Directing for the Camera. 3 hrs.**
Projects in directing for the camera. Video taping of selected directing exercises. (PR: THE 437/537 or permission of instructor)
- 540 Theatre History to 1660. 3 hrs.**
Survey of man's activities in the theatre from primitive times to 1660. (PR: THE 101 or permission of instructor)
- 541 Theatre History since 1660. 3 hrs.**
Survey of man's activities in the theatre from 1660 to the present. (PR: THE 101 or permission of instructor)

- 550 Stage Lighting III. 3 hrs.**
Advanced study in the aesthetic principles of lighting design. Emphasis on design principles in non-proscenium theatres. (PR: THE 350)
- 560 Scene Design II. 3 hrs.**
Advanced work in the process and styles of design for the stage. Emphasis on abstraction, different materials, and designing for various theatre forms. (PR: THE 261, 360)
- 580-583 Special Topics in Theatre. 1-4; 1-4; 1-4; 1-4 hrs.**
Program of study not normally covered in other courses. Topics vary from semester to semester. (PR: Permission of chairman)
- 585-588 Independent Study. 1-4; 1-4; 1-4; 1-4 hrs.**
Courses taught by tutorials; directed independent readings or research; problem reports, and other activities designed to fill the needs of individual students. (PR: Permission of chair)