ECO 101 CONTEMPORARY ECONOMIC ISSUES. (3)
A basic course in the analysis of contemporary economic issues with emphasis on current economic topics such as inflation, poverty and affluence, urban congestion, and environmental pollution. (Credit will not be given for this course to students who have received prior credit in ECO 201 and/or 202, and/or ECO 260 and/or 261.)
Note: ECO 201 was formerly ECO 261. ECO 202 was formerly ECO 260.

ECO 201 PRINCIPLES OF ECONOMICS I. (3)
The study of the allocation of scarce resources from the viewpoint of individual economic units. Topics include household and firm behavior, competitive pricing of goods and resources, and monopoly power. (Credit will not be given for this course to students who have received credit in ECO 261.)

ECO 202 PRINCIPLES OF ECONOMICS II. (3)
A study of how society's needs are satisfied with the limited resources available. Topics include contemporary issues such as inflation, unemployment, economic growth, international dependencies, and how public policy deals with them. (Credit will not be given for this course to students who have received credit in ECO 260.) Prereq: ECO 201 or equivalent.

ECO 391 ECONOMIC AND BUSINESS STATISTICS. (3)
A survey of statistical techniques relevant to modern economics and business, with major emphasis on correlation and regression, Bayesian decision theory, index numbers, time series analysis, and forecasting models. Prereq: STA 291 or equivalent.

ECO 395 INDIVIDUAL WORK IN ECONOMICS. (1-6)
Students confer individually with the instructor. Written paper usually expected and filed in chairperson's office. May be repeated to a maximum of six credits. Prereq: GPA of 3.0 in major, approval of instructor and chairperson.

ECO 400 SEMINAR IN ECONOMICS (Subtitle required). (3)
Readings, research and discussion in a seminar format to illuminate problems of historical and contemporary interest in areas of special faculty competence. May be repeated to a maximum of nine credits, but may not be repeated under the same subtitle. Will be limited to a maximum of 15 students. Prereq: ECO 201, 202, plus two additional economic courses.

ECO 450G THE ECONOMICS OF POVERTY AND WELFARE PROGRAMS. (3)
Examines the economic conditions of the poor in the U.S., theories of poverty, and major redistribution programs in the U.S. The course will study the economic impacts of such programs as Social Security, Medicare, Aid to Families with Dependent Children, Food Stamps, Medicaid, and child care subsidies. Prereq: GPA of 3.0 in major, approval and chairperson or instructor.

ECO 463 ANALYSIS OF BUSINESS CONDITIONS. (3)

ECO 465G COMPARATIVE ECONOMIC SYSTEMS. (3)
This course deals with the theoretical underpinning of the major economic systems in existence today. The classical model of competitive market capitalism is reviewed first, followed by the Marxist neo-Marxian (Leninist) critique of capitalism. Next, the Keynesian and the neo-Keynesian models are analyzed. This course concludes with a review of the Langem model of decentralized (market) socialism. Prereq: ECO 202 or equivalent.

ECO 467 AMERICAN ECONOMIC HISTORY. (3)
The development of the American economy will be examined within the general framework of economic theory. Major emphasis will be given to the long-run process of economic growth of the economy from the colonial period to the present. Prereq: ECO 202 or equivalent.

ECO 471 INTERNATIONAL ECONOMICS. (3)
The basic exchange model is the most important topic in this course. The exchange model is used to illustrate the gains from trade, the role of opportunity costs, and the properties of relative prices. Production considerations, the concept of comparative advantage, and the resulting factor rewards are introduced. Trade distortions are introduced and studied from the point of view of protectionism and its consequences. Fixed and flexible exchange rates and the concept of balance of payments are also covered. Prereq: ECO 202 or equivalent. (Same as AEC 471.)

ECO 473G ECONOMIC DEVELOPMENT. (3)
A comparative study of economic progress in selected countries; growth patterns, theories of development and capital formation, interaction of social and economic change. Prereq: ECO 202 or equivalent.

ECO 475G THE LATIN AMERICAN ECONOMIES. (3)
This course will provide a clear understanding of the Latin American economies using economic theory to analyze problems and their potential solutions. Prereq: ECO 202 or equivalent.

ECO 477 LABOR ECONOMICS. (3)
Application of economic principles to analyze the operation of labor markets. Topics covered include: theories of labor movements, comparative analysis of unionism in different economies, labor supply, labor demand, human capital, collective bargaining, public policy and the operation of labor markets. In addition, selected topics such as female and minority employment, social security, and industrial conflict will be covered. Prereq: ECO 202 or equivalent.

ECO 479 PUBLIC ECONOMICS. (3)
An application of economic analysis to the study of the role of government. Emphasis is on the reasons for and the effects of government intervention in the economy. Topics covered include: market failure, public goods and externalities, welfare policy, voting and public choice, taxation, public debt and cost-benefit analysis. Prereq: ECO 202 or equivalent. (Same as AEC 479.)

ECO 485G MONETARY ECONOMICS. (3)
A detailed discussion of the financial sector of basic static macroeconomic models, including the views of both the monetarist and neo-Keynesian schools. Institutional aspects of the financial system are discussed. The course stresses problems of economic stabilization. Prereq: ECO 202 or equivalent.

ECO 487G INTERMEDIATE MACROECONOMIC THEORY. (3)
National income concepts, the determination of aggregate income and employment, the theory of money and inflation and problems of economic growth. Prereq: ECO 202 or equivalent.

ECO 488G INTERMEDIATE MICROECONOMIC THEORY. (3)
An analysis of the behavior of consumers and firms, price determination, various market structures, and income distribution. Prereq: ECO 202 or equivalent.

ECO 492G ECONOMIC MODELING AND DATA ANALYSIS. (3)
To provide the student with a firm foundation in the concepts and procedures for the design, estimation, and analysis of economic models. Emphasizes the structure and utilization of economic models, the availability of economic information, and consideration of computer systems available for data base management. Prereq: ECO 391, 487G or consent of instructor.

ECO 590 INTRODUCTION TO QUANTITATIVE ECONOMICS I. (3)
An introduction to mathematical approaches to economic theory. Emphasis on linear models, constrained optimization, and techniques used in comparative statics. Prereq: ECO 488G, MA 113; or consent of instructor. (Same as AEC 590.)

ECO 610 MANAGERIAL ECONOMICS. (3)
Analysis of applications of economic theory to management decision making. Such problems as demand and cost determination, pricing, and capital budgeting are treated. Prereq: Graduate standing, MA 123 or its equivalent.

ECO 611 BUSINESS CONDITIONS ANALYSIS. (3)
Applied macroeconomics course that covers general economic conditions affecting organizations. Topics include national income accounts, price indices, and the determination of national income through IS-LM and aggregate supply and demand analysis. Additional problems studied include deposit creation, monetary aggregates, business cycles, stabilization policy, expectations, inflation, and unemployment. Prereq: Graduate standing, ECO 610, MGT 650.

ECO 626 TIME SERIES ANALYSIS. (3)
Time series and stochastic processes, auto-correlation functions and spectral properties of stationary processes; linear models for stationary processes, moving average, autoregressive and mixed auto-regressive-moving average processes; linear nonstationary models, minimum mean square error forecasts and their properties; model identification, estimation and diagnostic checking. Prereq: STA 422G or its equivalent. (Same as STA 626.)

*ECO 636 HEALTH ECONOMICS. (3)
This course applies general theoretical principles of economics to the health care sector. The basic approach is to recognize the importance of scarcity and incentives, allowing for differences peculiar to health. The demand and supply of health and medical care are examined as they involve physicians, nurses and hospitals. The competitiveness of their markets, health insurance and the role of government are explored. Special topics include regulation and planning, benefits-cost analysis, and reform health plans. Prereq: PA 652, HA 601, HA 621, MHA or MPA program status. (Same as HA/PA 636.)
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*ECO 652 PUBLIC POLICY ECONOMICS. (3)
Principles and practices of economical resource management in the governmental sector: tax and expenditure types, intergovernmental fiscal cooperation, debt financing, budgeting and financial planning. Prereq: MPA or MHA program status; prereq or concur: completion of MPA or MHA computer skills program requirement. (Same as HA/PA 652.)

ECO 660 ADVANCED MICROECONOMIC THEORY. (3)
An intensive course covering microeconomic theory and its various methodological and analytical techniques. Prereq: ECO 488G or consent of instructor.

ECO 661 MACROECONOMIC THEORY. (3)
National income and employment theory, theories of inflation, and problems of economic growth. Not open to those with credit in ECO 761. Prereq: ECO 487G or consent of instructor.

ECO 665 HISTORY OF ECONOMIC THOUGHT I. (3)
The background and development of English political economy up to 1848.

ECO 666 HISTORY OF ECONOMIC THOUGHT II. (3)
Main lines of controversy, reconstruction and development in economics since 1848 with an emphasis on the bibliography.

ECO 670 ECONOMICS OF INTERNATIONAL FINANCIAL INSTITUTIONS. (3)
An in-depth study of financial markets, commercial banking, and business finance in an international setting. Prereq: ECO 471G, 485G.

ECO 671 INTERNATIONAL ECONOMICS SEMINAR I. (3)
History and analysis of theories of international trade; theories of international equilibrium and mechanisms of equilibrium adjustments; theory of economic integration. Prereq: ECO 471G.

ECO 672 WORLD TRADE AND COMMERCIAL POLICY. (3)
An analysis of trade patterns and the implication of government policy on trade, in the light of both economic theory and empirical findings. Prereq: Successful completion of an upper division undergraduate or graduate level economics course.

ECO 674 AGRICULTURE AND ECONOMIC DEVELOPMENT. (3)
Analytical consideration of the role of agriculture in economic development in relation to overall development strategy at various stages of growth. Theoretical and policy issues of particular relevance to the agricultural development in underdeveloped agrarian economies with various resource, social, political and economic systems. Prereq: ECO 473G or consent of instructor. (Same as AEC 626.)

ECO 676 LABOR ECONOMICS I. (3)
The theory and estimation of the demand for and the supply of labor are introduced. Topics include demographic changes, minimum wages, retirement, and secular trends in labor force participation. The concept of human capital is examined, including applications to income distribution. Theory and evidence on the structure of wages in the U.S. is considered. Topics include compensating wages and race and gender differences. Prereq: ECO 487G and ECO 488G or consent of instructor.

ECO 679 PUBLIC ECONOMICS. (3)
An advanced study of both government activities influence allocation, relative prices and welfare and what is the proper role of the public sector in resource allocation. Relevant topics include: public goods, externalities, tax incidence, optimal taxation, benefit-cost analysis, public pricing, fiscal federalism, state-municipal finance and public choice. Prereq: ECO 487G, 488G or consent of instructor.

ECO 680 BENEFIT-COST ANALYSIS. (3)
Principles, practices and applications of applied welfare analysis are the content of this course. The basic theory of benefit-cost analysis is presented and the relevance of implementation analysis in policy analysis is established. Prereq: PA 652. (Same as PA 680.)

ECO 683 URBAN AND REGIONAL ECONOMICS. (3)
An intensive study of the theory, evidence and policy concerning urban areas and regions. Topics typically covered include: nature of regions and urban areas, size and distribution of cities, location decisions, housing, transportation, migration and regional growth. Prereq: ECO 487G, 488G, 492G or consent of instructor.

ECO 684 ENVIRONMENTAL ECONOMICS, REGULATION AND POLICY. (3)
This course takes a balanced practitioner approach to the problems of the environment and environmental regulation. Efficiency aspects will be developed carefully, so as to provide a background for an extensive coverage of various available alternative policies. Prereq: PA 652 and MPA or economics program status or consent of instructor. (Same as PA 727.)

ECO 686 MONETARY ECONOMICS: THEORY. (3)
Demand and supply of money and other assets. The financial sector in macro-static and dynamic models of the economy. Prereq: ECO 760, 761 or consent of instructor.

ECO 687 MONETARY ECONOMICS: POLICY. (3)

ECO 688 OPTIMIZATION AND ECONOMIC THEORY I. (3)
A study of the applications of optimization techniques such as search theory, the calculus of variations, optimal control theory, and dynamic programming through economics. Applied topics may include the economics of information, economics of uncertainty, and modern theories of consumer and firm behavior. Prereq: ECO 762.

ECO 691 INTRODUCTION TO ECONOMETRICS I. (3)
The first course in the introduction to econometrics. A comprehensive survey of the general linear regression, autocorrelation, errors in variables and distributed lag models. Prereq: STA 424G, STA 525 or consent of instructor.

ECO 692 INTRODUCTION TO ECONOMETRICS II. (3)
The second course in the introduction to econometrics. A comprehensive survey of identification, estimation and hypothesis testing in the context of simultaneous equations model. Prereq: ECO 691 or consent of instructor.

#ECO 700 TEACHING METHODS IN BUSINESS. (0)
A three part course that examines what constitutes good teaching and explores effective techniques for college instruction. Seminars emphasize practical information for both the principal activities and the details of teaching. Departmental discussions allow students to discuss issues that arise in their teaching practice. Reviews of classroom performance provide professional feedback in order to enhance on-the-job learning. Seminar, two hours per week. Prereq: Approval of Director of Graduate Studies. (Same as BA 700.)

ECO 741 THEORY OF THE FIRM AND MARKET STRUCTURE. (3)
A study of firms and markets covering such topics as organizational structure and objectives of firms; product selection, advertising and quality; price discrimination; vertical control; entry, accommodation and exit; cost structure and market organization, market structure and performance; and public policy. Prereq: ECO 660.

ECO 742 INDUSTRIAL ORGANIZATION. (3)
A comprehensive survey of the literature in industrial organizations including static theories of oligopoly, dynamic theories of oligopoly, information about strategic behavior, research and development, patents, and adoption of new technology.

ECO 749 DISSERTATION RESEARCH. (0)
Half-time to full-time work on dissertation. May be repeated to a maximum of six semesters. Prereq: Registration for two full-time semesters of 769 residence credit following the successful completion of the qualifying exams.

*ECO 752 THE ECONOMICS OF POLICY ANALYSIS. (3)
This course examines economic approaches to policy analysis. Included is an analysis of the major concepts of economic analysis and their application to a number of policy problems. Prereq: PA 652 or equivalent, and Ph.D. program status or consent of instructor. (Same as PA 752.)

ECO 760 NEOCLASSICAL MICROECONOMIC THEORY. (3)
The Neoclassical theory of consumer behavior, production, market equilibrium and imperfect competition. Prereq: ECO 448G, 590 or consent of instructor.

ECO 761 ADVANCED MACROECONOMIC THEORY. (3)
The rigorous development of a general equilibrium macroeconomic model in the context of the recent literature. Prereq: ECO 487G, 661 or consent of instructor.

ECO 762 GENERAL EQUILIBRIUM ANALYSIS AND WELFARE ECONOMICS. (3)
Existence, stability, efficiency and Pareto satisfactoriness of competitive equilibrium. Recent developments in general equilibrium and welfare theory. Prereq: ECO 488G, 590 or consent of instructor.

ECO 763 SEMINAR IN MACROECONOMIC THEORY. (3)
Recent developments and major issues in contemporary macroeconomic theory. Prereq: ECO 761.

ECO 768 RESIDENCE CREDIT FOR THE MASTER’S DEGREE. (1-6)
May be repeated to a maximum of 12 hours.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description and Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECO 760</td>
<td>ORGANIZATION AND ADMINISTRATION OF AMERICAN EDUCATION.</td>
<td>(3)</td>
<td>An analysis of the administration of local, state and federal education agencies and their relationships.</td>
</tr>
<tr>
<td>EDA 601</td>
<td>ADMINISTRATION OF EDUCATIONAL ORGANIZATIONS.</td>
<td>(3)</td>
<td>A study of the historical development of educational administration, administrative processes, the application of theory and values in decision making and an introduction to modern management methods applied to education.</td>
</tr>
<tr>
<td>EDA 603</td>
<td>CONSTITUTIONAL AND LEGAL BASIS OF PUBLIC SCHOOL ADMINISTRATION.</td>
<td>(3)</td>
<td>A study of court decisions to discover the legal principles involved in practical problems of school administration.</td>
</tr>
<tr>
<td>EDA 608</td>
<td>INTERNSHIP IN EDUCATIONAL ADMINISTRATION AND SUPERVISION.</td>
<td>(3)</td>
<td>Field experiences are provided for prospective administrators under the cooperative supervision of University personnel and principals, supervisors, and superintendents in Kentucky public school systems. May be repeated for a maximum of six credits.</td>
</tr>
<tr>
<td>EDA 629</td>
<td>THE PRINCIPAL.</td>
<td>(3)</td>
<td>An analysis of the building unit as a sub-system within a larger complex organization. Special emphasis on the changes in the role of the principal as a result of changes in society and in the schools.</td>
</tr>
<tr>
<td>#EDA 632</td>
<td>ADMINISTRATION OF EDUCATIONAL REFORM.</td>
<td>(3)</td>
<td>Study of administrative responsibilities associated with the development and implementation of educational reform and improvement projects and programs. Focus on knowledge and skills needed to work effectively with others in promoting successful program implementation.</td>
</tr>
<tr>
<td>EDA 633</td>
<td>ADMINISTRATION AND SUPERVISION OF INSTRUCTIONAL PROGRAMS.</td>
<td>(3)</td>
<td>A study of the role of organizational leadership in the development of instructional goals, instructional programs, evaluation procedures and procedures for educational changes.</td>
</tr>
<tr>
<td>EDA 634</td>
<td>ADMINISTRATION OF EDUCATIONAL PERSONNEL.</td>
<td>(3)</td>
<td>Consideration of the motivation and management of educational personnel with special emphasis on the professional in complex organizations. Attention is given to the theory and practice of collective bargaining in education.</td>
</tr>
<tr>
<td>EDA 635</td>
<td>BUSINESS ADMINISTRATION AND FINANCE OF PUBLIC EDUCATION.</td>
<td>(3)</td>
<td>A course for prospective superintendents. Emphasizes school support, including state, local, and federal revenues; budgetary policy; procedures for purchasing, accounting, and reporting costs; management of funds, property, equipment, and supplies; payroll procedures, records and reports.</td>
</tr>
<tr>
<td>EDA 639</td>
<td>THE SUPERVISOR.</td>
<td>(3)</td>
<td>A study of the role of the supervisor of instruction as part of administrative leadership in improving instructional programs with special emphasis on in-service education of staff.</td>
</tr>
<tr>
<td>EDA 641</td>
<td>ORGANIZATION AND ADMINISTRATION OF SCHOOL COMMUNITY RELATIONS.</td>
<td>(3)</td>
<td>Examination of issues and responsibilities attendant to the organization and administration of a school community relations program at the school district and the school building level. Focus on administrative tasks, duties, and responsibilities and research supporting school community interactions.</td>
</tr>
<tr>
<td>EDA 642</td>
<td>MICROCOMPUTER APPLICATIONS IN ADMINISTRATION.</td>
<td>(3)</td>
<td>This course provides prospective and practicing administrators with the opportunity to gain practical and theoretical knowledge in the subject matter related to microcomputer applications in the school environment.</td>
</tr>
<tr>
<td>#EDA 651</td>
<td>FOUNDATIONS OF INQUIRY.</td>
<td>(3)</td>
<td>Introductory study of assumptions and procedures of systematic inquiry used to investigate administrative, leadership and supervisory phenomena in education. Issues regarding both quantitative and qualitative models of inquiry are included. Prereq: ADSU major or consent of instructor.</td>
</tr>
<tr>
<td>#EDA 701</td>
<td>LEADERSHIP IN EDUCATIONAL ORGANIZATIONS I.</td>
<td>(3)</td>
<td>A study of leadership with particular emphasis on understanding the nature, defining characteristics, responsibilities, contextual determinants, and importance of leadership within educational organizations.</td>
</tr>
<tr>
<td>#EDA 702</td>
<td>LEADERSHIP IN EDUCATIONAL ORGANIZATIONS II.</td>
<td>(3)</td>
<td>A study of leadership with particular emphasis on examining the lives and actions of individual leaders for the purpose of understanding the nature, requirements and importance of leadership within educational organizations. Leadership theory is used to inform the discussion about each leader identified and studied.</td>
</tr>
<tr>
<td>EDA 749</td>
<td>DISSERTATION RESEARCH.</td>
<td>(0)</td>
<td>Half-time to full-time work on dissertation. May be repeated to a maximum of six semesters.</td>
</tr>
<tr>
<td>EDA 769</td>
<td>RESIDENCE CREDIT FOR THE DOCTOR’S DEGREE.</td>
<td>(0-12)</td>
<td>May be repeated indefinitely.</td>
</tr>
<tr>
<td>EDA 771</td>
<td>ADMINISTRATION IN ADMINISTRATION.</td>
<td>(1-3)</td>
<td>A variable topic seminar on selected problems in school administration. Activities designed to improve skill in planning, decision making, organizing, communicating, evaluating, negotiating, and resolving conflict will be provided as appropriate. Educational innovations and processes of implementing change may be analyzed. May be repeated to a maximum of six credits.</td>
</tr>
<tr>
<td>EDA 785</td>
<td>INDEPENDENT WORK IN SCHOOL ADMINISTRATION.</td>
<td>(3)</td>
<td>Includes research on a practical problem in school administration. Open only to students with at least one semester of graduate work in education. May be repeated to a maximum of six credits.</td>
</tr>
</tbody>
</table>

**Notes:**
- # = new course
- * = course changed
- † = course dropped
EDC 270 INTRODUCTION TO ART EDUCATION. (2)
A lecture-laboratory course investigating the theoretical, historical, psychological and sociological foundations of art education. Critical examination of individual and group activities currently offered in the elementary school art program. Lectures, curriculum design, evaluation of process and technique. Introduction to the visual arts through studio experiences. Lecture, one hour; laboratory, two hours per week. A-E 270 and A-E 272 together satisfy the state art requirement for general elementary teacher certification. Prereq: EDP 202. (Same as A-E 270.)

EDC 317 INTRODUCTION TO INSTRUCTIONAL MEDIA. (1)
An introductory instructional media course including basic production and utilization techniques for media materials and operation of commonly used educational media equipment. Topics include graphic presentation, transparency production, audio materials, motion pictures, 35mm photographic techniques, and an introduction to videotape television. Prereq: Admission to a Teacher Education Program.

EDC 322 ELEMENTARY PRACTICUM. (1-3)
Planned and supervised practicum in teaching elementary science, reading, social studies, and mathematics. Observation, selecting objectives and materials, questioning strategies, learning centers, instructional units, and assessment techniques will be emphasized. May be repeated to a maximum of three credits. Lecture, one hour; laboratory, six to twelve hours per week. Prereq: Admission to Early Elementary TEP. Concur: EDC 323, EDC 326, EDC 328, EDC 337, and EDC 329.

EDC 323 CLASSROOM MANAGEMENT AND DISCIPLINE. (3)
This course is designed to strengthen students' understanding of the relationship between classroom environment and classroom behavior. Activities and readings will focus on effective decision-making in classroom management and on developing alternatives for preventing and dealing with management and discipline problems. Twenty hours of field experience are required in conjunction with EDC 322. Prereq: Admission to TEP. Concur: EDC 322.

EDC 325 TEACHING IN THE ELEMENTARY SCHOOL. (3)
A course designed to develop understandings relative to program planning, daily schedule, record keeping, evaluation, reporting to parents, professional organizations, and teacher ethics. The unit approach as a method of organizing learning experiences in the elementary school is introduced.

EDC 326 TEACHING SOCIAL STUDIES IN THE ELEMENTARY SCHOOL. (3)
A study of methods and materials for teaching social studies at the elementary level. The course will include a critical analysis of a variety of objectives, instructional materials and strategies, and evaluation techniques for elementary social studies. Consideration will be given to addressing the individual needs of a diverse student population. Special emphasis is placed on instruction in grades K-4. Twenty hours of field experience are required in conjunction with EDC 322. Prereq: Admission to TEP and 15 hours of social sciences. Coreq: EDC 322.

EDC 328 TEACHING SCIENCE IN THE ELEMENTARY SCHOOL. (3)
A critical analysis of a variety of objectives, instructional materials and evaluation techniques for teaching elementary school science, with a special emphasis on grades K-4. Consideration will be given to addressing the individual needs of a diverse student population. Twenty hours of field experience are required in conjunction with EDC 322. Prereq: Admission to TEP and 12 hours of science. Coreq: EDC 322.

EDC 329 TEACHING READING AND LANGUAGE ARTS. (3)
Development of competencies for the teaching of reading and other language arts to groups. Course will also provide an overview of the nature of reading and language arts development from grades K-8. Twenty hours of laboratory work in the schools are required. Prereq: Admission to Early Elementary Education TEP or Middle School TEP.

EDC 330 DESIGNING A READING AND LANGUAGE ARTS PROGRAM FOR THE MIDDLE SCHOOL. (3)
A study of materials and techniques useful in the diagnostic teaching of reading and other language arts with students in grades 5-8. The course will emphasize materials, techniques, and procedures which diagnose individual strengths and weaknesses, and prescriptive instruction based upon the diagnosis. Lecture, three hours; laboratory, one hour. Prereq: EDC 329 or consent of instructor; admission to the Teacher Education Program.

EDC 334 ORAL AND WRITTEN LANGUAGE DEVELOPMENT IN THE ELEMENTARY SCHOOL. (3)
A study of language differences, methods for teaching children with language differences, ways to integrate oral language instruction with the total curriculum, ways to enhance students' expressive writing abilities, and ways to teach grammar, spelling, and handwriting through functional and creative writing activities. Prereq: EDC 329 and admission to the elementary teacher education program.

EDC 337 TEACHING MATHEMATICS IN ELEMENTARY SCHOOLS. (3)

EDC 339 DESIGNING A READING AND LANGUAGE ARTS PROGRAM FOR THE ELEMENTARY SCHOOL. (3)
A study of materials and procedures for developing reading and language arts skills with elementary students, with an emphasis on grades K-4. Course will emphasize how to diagnose individual student skill strengths and weaknesses and build a prescriptive program based upon the diagnosis. Prereq: EDC 329; admission to the TEP or permission of instructor. Coreq: EDC 322.

EDC 341 MIDDLE SCHOOL CURRICULUM AND INSTRUCTION. (3)
This course is designed to acquaint teachers of early adolescents with the rationale behind the middle school concept, and, in particular, the techniques of teaching as an individual and as a member of an interdisciplinary team. The development of generic teaching skills such as planning, implementing, managing, and evaluating learning programs is emphasized. Prereq: Admission to Teacher Education Program.

EDC 342 STUDENT TEACHING IN ART. (3-12)
Designed to give the student practical experience through observation, planning, teaching, and evaluating procedures. The student works with children on all grade levels under the guidance of the supervising teacher. Offered on a pass/fail basis only. Prereq: Admission to the Teacher Education Program or permission of instructor.

EDC 343 THE EARLY ADOLESCENT LEARNER: PRACTICUM. (3)
This course is designed to extend and apply knowledge of the social, emotional, intellectual, and physical characteristics of the early adolescent learner through observation and interaction in school settings. The course format will include a weekly seminar and a supervised field placement in a middle school setting. Lecture, one hour; laboratory, six hours per week. Prereq: Admission to Teacher Education Program.

EDC 344 PRINCIPLES AND TECHNIQUES OF TEACHING IN THE SECONDARY SCHOOL. (3)
This course will include a survey of secondary school curriculum, development of teaching objectives, instruction in the development of the technical skills of teaching. Prereq: Admission to the Teacher Education Program or permission of instructor.

EDC 345 TEACHING MATHEMATICS IN THE MIDDLE SCHOOL. (3)
A study of theoretical models and methodological strategies for teaching arithmetic, informal geometry, and introductory algebra at the middle school level. The course will include a critical analysis of a variety of objectives, instructional materials and strategies and evaluation techniques. Consideration will be given to addressing the individual needs of a diverse student population. Prereq: Admission to Teacher Education Program; 18 hours of undergraduate mathematics. Concur: EDC 330 and EDC 343.

EDC 346 TEACHING SOCIAL STUDIES IN THE MIDDLE SCHOOL. (3)
A study of theoretical models and methodological strategies for teaching social studies at the middle school level. The course will include a critical analysis of a variety of objectives, instructional materials and strategies, and evaluation techniques for middle school social studies. Consideration will be given to addressing the individual needs of a diverse student population. Prereq: Admission to TEP; completion of 24 hours in social studies. Concur: EDC 330 and EDC 343.
EDC 347 TEACHING ENGLISH AND COMMUNICATION IN THE MIDDLE SCHOOL. (3) This course will explore various approaches to teaching English and communication in the middle school with special emphasis on the nature of language development. Prereq: Admission to the TEP and 24 hours in English/communication specialization. Concur: EDC 330 and 343.

EDC 348 TEACHING SCIENCE IN THE MIDDLE SCHOOL. (3) A study of theoretical models and methodological strategies for teaching science at the middle school level. This course will include a critical analysis of a variety of objectives, instructional materials and strategies, and evaluation techniques for middle school science. Special needs of individuals in a diverse middle school population are emphasized. Prereq: Admission to TEP and 24 hours of science. Concur: EDC 330 and 343.

EDC 349 STUDENT TEACHING IN THE MIDDLE SCHOOL. (3-12) This course is designed to give the student experience teaching within a middle school setting. Weekly seminars will be held to discuss issues relevant to the student teacher’s experience. Offered on a pass-fail basis only. Lecture, 1 hour; laboratory, 30 hours per week. Prereq: Must meet published college requirements for student teaching.

EDC 353 STUDENT TEACHING IN ENGLISH. (3-12) Observation and practice in teaching high school English. Included are objectives and content of English courses in high school, planning and methods of teaching, testing, textbook analysis, audio-visual material and equipment, and safety education. Offered on a pass-fail basis only. Prereq: Admission to the Teacher Education Program or permission of instructor.

EDC 354 STUDENT TEACHING IN LANGUAGES. (3-12) Aims and objectives, courses of study, materials, methods, and testing in French, Spanish, and Latin. Includes observation and practice in the content field, safety education, audio-visual aids, and planning conferences with the supervising teacher. Offered on a pass-fail basis only. Prereq: Admission to the Teacher Education Program or permission of instructor.

EDC 355 STUDENT TEACHING IN THE SCIENCES. (3-12) Aims and objectives, courses of study, methods, tests, equipment, general science, biology, physics, and chemistry. The course includes observation and practice, safety education, audio-visual aids, and planning conferences with the supervising teacher. Offered on a pass-fail basis only. Prereq: Admission to the Teacher Education Program or permission of instructor.

EDC 356 STUDENT TEACHING IN MATHEMATICS. (3-12) Aims and objectives, course of study, materials, methods, and testing in algebra, geometry, and trigonometry. Includes observation and practice in the content field, safety education, audio-visual aids, and planning conferences with the supervising teacher. Offered on a pass-fail basis only. Prereq: Admission to the Teacher Education Program or permission of instructor.

EDC 357 STUDENT TEACHING IN THE SOCIAL STUDIES. (3-12) Includes a study of the development and present status of social studies programs, classroom methods and activities, teaching materials, testing and evaluation, professional aids to teachers, safety education, and observation and participation in actual classroom experiences. Offered on a pass-fail basis only. Prereq: Admission to the Teacher Education Program or permission of instructor.

EDC 358 STUDENT TEACHING IN PSYCHOLOGY. (3-12) Cultivating in intensive half to full semester field experience in teaching psychology. Forty-hour laboratory per week. May be repeated to a maximum of 12 credits. Offered on a pass-fail basis only. Prereq: Completion of the academic and professional sequence required in social studies education prior to student teaching.

EDC 362 FIELD EXPERIENCES IN SECONDARY EDUCATION. (1) Supervised experiences in schools and agencies of secondary education. Required of all majors in Secondary Teacher Education Programs in the Department of Curriculum and Instruction. Includes field trip, inspection of programs and professional organizations. Prereq: Admission to the Teacher Education Program.

EDC 377 STUDENT TEACHING IN MUSIC. (3-12) A course planned for teachers who expect to become either instructors or supervisors of music in the public schools. Observation, teaching, work on research problems, and conferences with the supervising teacher included. Offered on a pass-fail basis only. Prereq: Admission to the Teacher Education Program or permission of instructor.

EDC 411 STUDENT TEACHING IN EARLY CHILDHOOD EDUCATION. (6-12) Course designed to give students experience with supervised teaching at two levels: pre-primary and primary. Emphasis will be placed on observations and teaching (individual, small, and large group methods). One afternoon per week will be devoted to a discussion and analysis of problems in student teaching. Discussion, two hours; laboratory, 22 hours per week. Offered on a pass-fail basis only. Prereq: Completion of professional sequence and formal admission to student teaching; admission to the Teacher Education Program or permission of instructor. (Same as FAM 411.)

EDC 433 STUDENT TEACHING IN THE ELEMENTARY SCHOOL. (3-12) A course designed to give the student experience with and practice in the program of an elementary school. Actual work with children in all learning situations is the basic part of the course. A required weekly seminar will include sessions on: beginning teacher internship, school law and students’ rights, administrative organization, and professional development. Offered on a pass-fail basis only. Prereq: Must meet the published college requirements for student teaching.

EDC 449 SOCIAL PROCESSES AND EFFECTS OF MASS COMMUNICATION. (3) The relationship between the organization of modern society and its communication media: Special emphasis is given to the way in which cultural processes and social change have an impact upon the mass media, and upon the way in which the mass media influence cultural processes and social change. The social-psychological bases of communication are studied within a context of theory and research. Prereq: COM/SOC 249 or its equivalent. (Same as COM/SOC 449.)

EDC 454 CULTURE, EDUCATION AND TEACHING ABROAD. (2-4) Introduction to the social, political, economic, and educational institutions of another country in preparation for student teaching in that country. The process and problems of adjusting to life in another culture will be included as well as instruction in the language of the host country as needed. Faculty from other departments in the University will be used as well as informants from the country involved. Lecture, three hours per week; laboratory, two hours per week for language practice. Prereq: Admission to a teacher education program. (Same as EPE 454.)

EDC 500 CLINICAL AND LABORATORY TEACHING. (3) The course focuses on generic teaching skills that can be used effectively in a range of school and clinical settings. Included are preparation of instructional objectives, teaching methodologies, materials selection and utilization, and assessment. Lecture, two hours; laboratory, two hours per week. Prereq: 12 hours of social and/or behavioral science and consent of instructor, NUR 814.

EDC 501 TEACHING INTERNSHIP. (1-12) Supervised practice teaching under competent leadership. Observation, instruction, independent study which parallels field experience, and conferences with supervising instructor included. This course is designed primarily for students in allied health professions, education, library and information science, home economics, and social work. May be repeated to a maximum of 12 hours. Prereq: EDC 500 or consent of instructor.

EDC 513 TEACHING ENGLISH AS A SECOND LANGUAGE. (3) The course will examine the current theories and methods of teaching English as a second language. The course will include (1) language learning theory as it relates to other disciplines; (2) methods and techniques of contrastive analysis. Prereq: One course in linguistics or consent of instructor. (Same as ENG 513.)

EDC 514 TESL MATERIALS AND METHODS. (3) An extension of ENG/EDC 513, this course will include examination and evaluation of published materials designed for teaching English to speakers of other languages. Students will create individualized teaching materials and gain practical experience in applying the methods and using their own materials. Prereq: ENG/EDC 513 or consent of instructor. (Same as ENG 514.)

EDC 521 MATERIALS AND METHODS IN TEACHING MATHEMATICS IN THE SECONDARY SCHOOL. (3) A course emphasizing the methods and materials used in teaching secondary school mathematics, including simulated teaching of selected topics from arithmetic, algebra, geometry and upper level school mathematics. Prereq: Admission to the Teacher Education Program or permission of instructor.

EDC 522 MATERIALS AND METHODS IN TEACHING SOCIAL STUDIES IN THE SECONDARY SCHOOL. (3) A course for prospective secondary school social studies teachers in the utilization of materials, resources, equipment and techniques appropriate for modern teaching strategies. Prereq: Admission to the Teacher Education Program or permission of instructor.
EDC 524 MATERIALS AND METHODS FOR TEACHING SCIENCE IN THE SECONDARY SCHOOL. (3)
A course designed to provide practical experience in curriculum materials and methods for the development of teaching models in secondary school science. Prereq: Admission to the Teacher Education Program or permission of instructor.

EDC 525 MATERIALS AND METHODS OF TEACHING ENGLISH IN THE SECONDARY SCHOOL. (3)
A course designed to develop frames of reference from which to make appropriate selection of materials and methods for the teaching of secondary school English. Prereq: Admission to the Teacher Education Program or permission of instructor.

EDC 533 TEACHING READING IN THE SECONDARY SCHOOL. (3)
A study of current methods and materials useful in teaching reading in secondary schools with particular emphasis on the improvement of reading in the content areas. Prereq: Admission to the Teacher Education Program or permission of instructor.

EDC 534 READING AND STUDY SKILLS IN ENGLISH. (3)
An introductory course for teachers of English. The emphasis is on developing competencies necessary for teaching reading and study strategies in the English and humanities curriculum, especially at the junior and senior high school levels. Lecture, three hours; laboratory, one hour. Prereq: Junior standing, admission to the TEP in English education, or consent of instructor.

EDC 538 ADVANCED ARTS AND CRAFTS IN THE ELEMENTARY SCHOOL. (3)
Planned to give the elementary teacher an understanding of teaching methods involved in, and construction of, art activities which would enrich the classroom program. Prereq: Teaching certificate or permission of the instructor. (Same as A:E 538.)

EDC 544 UTILIZATION OF EDUCATIONAL MEDIA. (3)
Surveys the broad area of educational media with an emphasis on utilization and the advantages and disadvantages of the various media. Provides experience in relating educational technology to productive learning activity.

EDC 545 PREPARATION OF INSTRUCTIONAL MATERIALS. (3)
Develops a basic pattern for the preparation of a wide variety of instructional materials. Laboratory practice is provided for the production of materials for projected and nonprojected use. Sources of free and inexpensive materials will be identified and evaluated. Lecture, two hours; laboratory, two hours.

EDC 547 MICROCOMPUTERS IN INSTRUCTION. (3)
An introduction to the roles and uses of microcomputers in instruction. Topics include instructional applications, as well as the selection and utilization of instructional computing hardware and software, and teacher utilities. Prereq. CS 101 or consent of instructor.

EDC 550 TEACHING THE CULTURALLY DIFFERENT. (3)
A critical study of the concept of disadvantage, relevant teaching practices, institutional programs, and curricula.

EDC 555 MODERN EDUCATIONAL PROBLEMS. (GENERAL CURRICULUM). (3)
EDC 575, 576 MODERN EDUCATIONAL PROBLEMS. (UNCLASSIFIED). (3 ea.)

EDC 577 ART IN SECONDARY SCHOOLS. (3)
This course provides students with an overview of the secondary school in American education and explores the history, theory, techniques and contemporary issues of teaching art in the secondary schools. Skills in the planning of multicultural activities and the teaching and evaluation of secondary art experiences are stressed. Full class instruction, video, microteaching, laboratory and studio experiences are incorporated into class design. Prereq: Major in art education or consent of instructor. (Same as A:E 577.)

EDC 578 ART IN ELEMENTARY SCHOOLS. (3)
Study of perceptual and aesthetic awareness in children. Field and practical experiences with methods and materials appropriate to the teaching of art in the elementary school. Multicultural activities stressed. Lesson planning, curriculum design, evaluation, teaching skills, classroom safety, multicultural activities included: lecture, demonstration, microteaching laboratory and studio experiences. Prereq: Major in art education, or consent of the instructor. (Same as A:E 578.)

EDC 580 INTRODUCTION TO GIFTED EDUCATION. (3)
This course reviews the historical development of and the theoretical and empirical support for differentiated educational programs for gifted and talented children. Specific issues addressed include defining and identifying giftedness, teacher competencies and training, providing differentiated curricula, and program evaluation. (Same as EDP 580.)
EDC 621 LINGUISTIC AND COGNITIVE FOUNDATIONS OF READING IN EARLY CHILDHOOD. (3)
A study of reading as a language-based process with an emphasis upon developing observational skills to assess the child’s growth in oracy and literacy skills and upon designing a language learning environment to meet these needs. Prereq: EDC 339 or permission of instructor.

#EDC 631 MATHEMATICS PEDAGOGY IN THE SECONDARY SCHOOL. (0-3)
Through campus and school-based experiences, students will learn how to engage young people in learning mathematics and how to make decisions about planning instruction and develop assessment based on a sound knowledge base for applying content, materials, and methods (including educational technology) appropriate for high school students. May be repeated to a maximum of three credits. Lecture, 1-3 hours; laboratory, 3-6 hours per week. Prereq: Admission to the Teacher Education Program and the M.A./M.S. in Education (Initial Certification Option – Secondary Education).

#EDC 632 SOCIAL STUDIES PEDAGOGY IN THE SECONDARY SCHOOL. (0-3)
Through campus and school-based experiences, students will learn how to engage young people in learning social studies and how to make decisions about planning instruction and develop assessment based on a sound knowledge base for applying content, materials, and methods (including educational technology) appropriate for high school students. May be repeated to a maximum of three credits. Lecture, 1-3 hours; laboratory, 3-6 hours per week. Prereq: Admission to the Teacher Education Program and the M.A./M.S. in Education (Initial Certification Option – Secondary Education).

#EDC 633 BUSINESS PEDAGOGY IN THE SECONDARY SCHOOL. (0-3)
Through campus and school-based experiences, students will learn how to engage young people in learning business and how to make decisions about planning instruction and develop assessment based on a sound knowledge base for applying content, materials, and methods (including educational technology) appropriate for high school students. May be repeated to a maximum of three credits. Lecture, 1-3 hours; laboratory, 3-6 hours per week. Prereq: Admission to the Teacher Education Program and the M.A./M.S. in Education (Initial Certification Option – Secondary Education).

#EDC 634 SCIENCE PEDAGOGY IN THE SECONDARY SCHOOL. (0-3)
Through campus and school-based experiences, students will learn how to engage young people in learning science and how to make decisions about planning instruction and develop assessment based on a sound knowledge base for applying content, materials, and methods (including educational technology) appropriate for high school students. May be repeated to a maximum of three credits. Lecture, 1-3 hours; laboratory, 3-6 hours per week. Prereq: Admission to the Teacher Education Program and the M.A./M.S. in Education (Initial Certification Option – Secondary Education).

#EDC 635 ENGLISH PEDAGOGY IN THE SECONDARY SCHOOL. (0-3)
Through campus and school-based experiences, students will learn how to engage young people in learning English and how to make decisions about planning instruction and develop assessment based on a sound knowledge base for applying content, materials, and methods (including educational technology) appropriate for high school students. May be repeated to a maximum of three credits. Lecture, 1-3 hours; laboratory, 3-6 hours per week. Prereq: Admission to the Teacher Education Program and the M.A./M.S. in Education (Initial Certification Option – Secondary Education).

EDC 641 RESEARCH AND THEORY IN TEACHING READING IN THE ELEMENTARY SCHOOL. (3)
A systematic study of the research and theory and their application to the teaching of reading in the elementary school. Attention will be given to new developments in the field. Prereq: EDC 330 or consent of instructor.

EDC 642 RESEARCH AND THEORY IN TEACHING LANGUAGE ARTS. (3)
A systematic study of research and theory in oral and written language acquisition and the implications of this knowledge for facilitating the development of listening, speaking and writing in classroom settings. The interrelationships among all of the language arts (reading, writing, listening and speaking) will be stressed. Prereq: EDC 330, or 553, or 534, or consent of instructor.

EDC 670 ADVANCED STUDY IN THE TEACHING OF ELEMENTARY SCHOOL MATHEMATICS. (3)
New developments in modern elementary mathematics for teachers in the elementary schools will be reviewed. Special emphasis will be given to a study of new teaching methods, application of published research, techniques and trends in mathematics in the elementary school. Prereq: Graduate standing.

EDC 676 PRACTICUM IN GIFTED EDUCATION. (3)
Supervised experience in the instruction of gifted children. Requires placement in an approved program designed for serving gifted children plus participation in a weekly supervisory seminar. Lecture, two hours; laboratory, nine hours per week. Prereq: EDP 580, EDC 602, EDP 612 or consent of instructor. (Same as EDP 676.)

EDC 710 ADVANCED TOPICS IN INSTRUCTIONAL DESIGN. (3)
An analysis of selected instructional design theories and procedures which have been recently developed or are in the formative stages. Emphasis will be placed on theory and procedures which have been or are being empirically tested. Prereq: EDC 608 and EDP 610, or consent of instructor.

EDC 712 THE ELEMENTARY SCHOOL. (3)
Recent research and modern trends in teaching the skills and content subjects in the elementary school. Planned for supervisors, superintendents, principals, and teachers for better understanding of a modern elementary school.

EDC 714 THE SECONDARY SCHOOL. (3)
A course designed to acquaint the secondary teacher and the administrator with the nature and function of the secondary school.

EDC 724 ORGANIZATION AND SUPERVISION OF STUDENT TEACHING. (3)
A course designed for teachers preparing to become supervising teachers. The basic principles apply both to elementary and secondary education. Includes a presentation of the experiences deemed important in developing students into effective teachers.

EDC 730 PROBLEMS OF THE SCHOOL CURRICULUM. (3)
Problems in the field of the school curriculum and in the preparation of instructional materials. Students enrolling in this course are required to leave on file with the College of Education a complete report of each problem studied. May be repeated once for a maximum of six credits.

EDC 732 PRINCIPLES OF CURRICULUM CONSTRUCTION. (3)
Study of basic principles of curriculum development. Relationship of social and psychological factors to curriculum change. Survey of current approaches to curriculum organization. Considerations of means of curriculum development in the school systems.

EDC 740 PRACTICUM IN TEACHING READING AND RELATED LANGUAGE ARTS. (3)
Supervised practicum in analyzing problems in reading and related language arts and providing remedial work. Requires six hours per week in practice with individual children or groups, plus two hours per week in seminar. May be repeated to a maximum of six credits. Prereq: EDC 619, 620.

#EDC 746 SUBJECT AREA INSTRUCTION IN THE SECONDARY SCHOOL. (0-9)
Students will teach in their subject areas in the schools full-time, meet regularly to discuss teaching effectiveness and strategies for improvement and develop their professional portfolios. May be repeated to a maximum of nine credits. Lecture, 3-9 hours; laboratory, 6-18 hours per week. Prereq: The appropriate methods course in the subject area (EDC 631, 632, 634 or 635). Admission to the Teacher Education Program and the M.A./M.S. in Education (Initial Certification Option – Secondary Education).

EDC 748 MASTER’S THESIS RESEARCH. (0)
Half-time to full-time work on thesis. May be repeated to a maximum of six semesters. Prereq: All course work toward the degree must be completed.

EDC 749 DISSERTATION RESEARCH. (0)
Half-time to full-time work on dissertation. May be repeated to a maximum of six semesters. Prereq: Registration for two full-time semesters of 769 residence credit following the successful completion of the qualifying exams.

EDC 768 RESIDENCE CREDIT FOR THE MASTER’S DEGREE. (1-6)
May be repeated to a maximum of 12 hours.

EDC 769 RESIDENCE CREDIT FOR THE DOCTOR’S DEGREE. (0-12)
May be repeated indefinitely.

EDC 777 SEMINAR IN CURRICULUM AND INSTRUCTION (Subtitle required). (1-3)
A critical analysis of recently developed materials and techniques in curriculum and instruction for precollege education. Includes analysis of evaluative research related to new materials and techniques. May be repeated to a maximum of nine credits. Prereq: Consent of instructor.
EDP 202 HUMAN DEVELOPMENT AND LEARNING. (3)
Theories and concepts of human development, learning, and motivation are presented and applied to interpreting and explaining human behavior and interaction in relation to teaching across the developmental span from early childhood to adulthood. A field experience in a school or other educational agency is required and basic part of the course. Prereq: PSY 100.

EDP 203 TEACHING EXCEPTIONAL LEARNERS IN REGULAR CLASSROOMS. (3)
An introduction to the characteristics and instructional needs of exceptional learners is presented with an overview of principles, procedures, methods, and materials for adapting educational programs to accommodate the integration of exceptional children in regular classrooms, when appropriate. A field experience in a school or other educational agency is required and basic part of the course. Lecture, three hours per week; laboratory, two hours per week for a maximum of six weeks. Prereq: Successful completion of EDP 202 with an earned grade of C or higher.

EDP 518 MENTAL HYGIENE. (3)
A general orientation to the subject of mental hygiene, its historical development, its scope and relation to various sciences. The individual and cultural determinants of behavior will be discussed. Not open to students who have had CH 520. Prereq: PSY 100 or 215, or EDP 202.

EDP 522 EDUCATIONAL TESTS AND MEASUREMENTS. (3)
Problems of measurement in the school program with special emphasis on standardized tests. General principles of test construction, teacher-made tests, examinations, criteria of evaluation and marking systems.

EDP 548 EDUCATIONAL PSYCHOLOGY. (3)
An introduction to the application of principles of psychology to classroom learning and teaching problems.

EDP 557 EDUCATIONAL STATISTICS. (3)
A study of the applications of statistical and graphical methods to educational data. Basic descriptive statistics, correlation, the normal distribution, and hypothesis testing will be covered. Prereq: MA 109 or equivalent; undergraduate or graduate status in any college of Education; or consent of instructor.

EDP 570 INTRODUCTION TO PSYCHOLOGICAL SERVICES IN SCHOOLS. (3)
A review of the historical development and models of organization and administration in the field of school psychology and the relationship between school psychology and other educational and psychological specialties. Prereq: Admission to School Psychology Program or consent of instructor.

EDP 580 INTRODUCTION TO GIFTED EDUCATION. (3)
This course reviews the historical development of and the theoretical and empirical support for differentiated educational programs for gifted and talented children. Specific issues addressed include defining and identifying giftedness, teacher competencies and training, providing differentiated curricula and program evaluation. (Same as EDC 580.)

EDP 600 LIFE SPAN HUMAN DEVELOPMENT AND BEHAVIOR. (3)
A survey of human development across the life span of the individual from conception to death. Content includes changes in motor skills, biological growth and decline, learning behavior, language, social, emotional, moral, and intellectual development as well as the role of the family, the school, peers, and work in relation to individual development. Critical evaluation of current theories which describe human development. (Same as FAM 654.)

EDP 601 HUMAN SOCIAL DEVELOPMENT. (3)
Survey of current research and theory regarding motor skills, social development, imitation, dependency, aggression, affiliation, moral development and peer group behavior. Prereq: EDP 600 or consent of instructor.

EDP 603 HUMAN COGNITIVE DEVELOPMENT. (3)
Theory and research concerning the development of attitudes, motives, self-concept and other cognitive processes are presented and the educational implications explored. Prereq: EDP 548 or EDP 610 or EDP 600.

EDP 680 PROFESSIONAL ISSUES IN COUNSELING PSYCHOLOGY. (2)
A first course in the graduate curriculum in counseling psychology. Addresses professional identity, A.P.A. ethical guidelines, legal aspects of psychological practice including licensing and confidentiality, historical perspectives, training issues, and current topics of professional concern in counseling psychology. Prereq: Enrollment in a post-master’s program in counseling psychology.

EDP 610 THEORIES OF LEARNING IN EDUCATION. (3)
Consideration of the theoretical origins of learning within the context of education. Topics include major theories of learning, physiological bases for learning, relationships between learning theory and instruction, and major applications of learning theories in educational settings.

EDP 611 HUMAN COGNITIVE LEARNING. (3)
Major cognitive learning theories which explain thinking and problem-solving behavior are compared and contrasted, especially as they are applied to arrange for effective instruction. Prereq: EDP 610 or EDP 548 or PSY 507 or equivalent.

EDP 613 SOCIAL PSYCHOLOGICAL ISSUES IN EDUCATION. (3)
This course is designed to meet the needs of graduate students in the College of Education, particularly those in educational, school, and counseling psychology, for a course in theory and principles of social psychology. While the course will survey basic concerns in social psychology, the material will be geared toward application in schools and other educational settings. For example, while the theories of attitude formation will be surveyed, principle focus will be on the measurement of attitudes in education. Further, in the study of group dynamics, applications to group learning, administrative leadership, and organizational theory will be stressed. In addition to the theories and principles of social psychology, research paradigms, social change, social influence, system consultation, and community issues as they relate to social psychological considerations will be covered. Prereq: One course in psychology or consent of instructor.

EDP 615 PROSEMINAR IN HISTORY AND SYSTEMS OF PSYCHOLOGY. (3)
A study of the philosophical precursors and scientific traditions of psychology. The schools of 19th and 20th century psychology are surveyed as are the major theoretical positions and content areas of contemporary psychology. Prereq: Graduating standing in department of Psychology or department of Educational and Counseling Psychology. (Same as PSY 620.)

EDP 620 TIPS AND METHODS OF EVALUATION. (3)
An examination of a subset of evaluation methods, topics, and problems. An introductory course in the area with minimal emphasis on quantitative methods. The course is designed to: provide a perspective from which evaluation studies may be viewed; and, to provide experiences for those who will learn from or conduct evaluations. Prereq: Consent of instructor, and a basic course in statistics or research. (Same as ANT/EPE 620/SOC 622.)
EDP 621 ADVANCED TOPICS AND METHODS OF EVALUATION. (3)
An advanced course in evaluation methods and techniques with an emphasis on quantitative methodology. State of the art ideas and methods of conducting evaluation studies and analyzing data from those studies are presented. The course is designed primarily for those who are conducting or will conduct evaluation studies. Prereq: A basic course in statistics or its equivalent; EDP/EPE/ANT 620, and consent of instructor. (Same as ANT/EPE 621.)

EDP 630 PRINCIPLES OF PSYCHOLOGICAL ASSESSMENT. (3)
An in-depth study of psychological assessment including observational methods, interviewing, behavioral analysis, and diagnosis of group psychometric testing as a means of arriving at a comprehensive individual analysis and the formation of a treatment plan. Specific emphasis will be placed on practice with administering, scoring, the use of computer integration techniques and report writing. The focus will be directed towards personality and vocational assessment. Lecture, two hours; laboratory, two hours per week. Prereq: EDP 522 or equivalent; enrollment in a professional program in Educational and Counseling Psychology or consent of instructor.

EDP 640 INDIVIDUAL ASSESSMENT OF COGNITIVE FUNCTIONING. (3)
This course provides theoretical material and advanced laboratory practice in the measurement of intelligence by individual techniques. Lecture, two hours; laboratory, two hours. Prereq: EDP 630 or equivalent and enrollment in a professional program in Educational and Counseling Psychology and consent of instructor.

EDP 642 INDIVIDUAL ASSESSMENT OF PERSONALITY FUNCTIONING. (3)
An in-depth study of the nature and measurement of human emotion, temperament and personality. Laboratory and field experience in the administration, scoring, and interpretation of tests related to personality functioning and underlying dynamics of personality. Lecture, two hours; laboratory, two hours per week. Prereq: Successful completion of EDP 640 with a grade of B or better or consent of instructor.

EDP 649 GROUP COUNSELING. (3)
An overview of the theoretical bases and practical procedures used in the organization, and effective use of group counseling in the facilitation of psychological and educational goals. Prereq: EDP 652 and EDP 661 or consent of instructor.

EDP 650 DIAGNOSIS AND PSYCHOPATHOLOGY IN COUNSELING PSYCHOLOGY. (3)
An integrative seminar in diagnosis and application of theories, techniques and assessment tools in Counseling Psychology. Special consideration of methods of classification of psychological states and characteristics including DSM-III temperament, analysis, and other research methods of integrating assessment and treatment alternatives. Prereq: EDP 630, 640 and admission to one of the doctoral programs in Educational and Counseling Psychology and consent of instructor.

EDP 652 THEORIES OF COUNSELING. (3)
A survey of theories and methods in facilitating personality growth, character maturation, problem solving, decision making, crisis resolutions, and behavior change, through individual and group counseling. Prereq: Acceptance to a graduate program in EDP with the following major codes: EGCO, CPEC, ECPY, ECP, ESP, ECP, EPCS, EPCE, EPSE, EPPS, CPNS, EPDS, or consent of instructor via permit.

EDP 656 METHODOLOGY OF EDUCATIONAL RESEARCH. (3)
An introduction to research methods applicable to education; the scientific method, research designs, measurement techniques, statistical analysis, and writing the research report.

EDP 658 PROBLEMS IN EDUCATIONAL PSYCHOLOGY. (1-3)
Special topics in psychological theories and research applicable to educational practices. May be repeated to a maximum of six credits. Prereq: Consent of instructor.

EDP 659 ADVANCED EDUCATIONAL MEASUREMENT. (3)
Theory and application in educational measurement with emphasis on the appropriate selection, administration, and interpretation of standardized tests used in educational assessment. Prereq: EDP 522 or equivalent.

EDP 660 RESEARCH DESIGN AND ANALYSIS IN EDUCATION. (3)
A study of the research methodologies applicable in the several aspects of education. Emphasis is on the design of research and analysis of accumulated data. Prereq: EDP 557.

EDP 661 TECHNIQUES OF COUNSELING II. (3)
Practice in interviewing, simulated problems, observational techniques, role of the counselor. Study of films, tapes and transcripts of leading practitioners of several schools of counseling. Supervised practice with selected clients. Lecture, two hours; laboratory, two hours. Prereq: EDP 605 and consent of instructor.

EDP 664 PRE-MASTERS PRACTICUM IN COUNSELING PSYCHOLOGY. (1-6)
Supervised experience in application of diagnostic and interviewing techniques in a counseling service. May be repeated to a maximum of twelve credits. Lecture, three hours; laboratory, eight hours per three credit hours. Prereq: EDP 652 and EDP 661 and Master’s candidacy in counseling and approval of departmental counseling committee.

EDP 665 POST-MASTERS PRACTICUM IN COUNSELING PSYCHOLOGY. (1-6)
Supervised experience in application of diagnostic and interviewing techniques in a counseling service. Prereq: A Master’s degree in Counseling Psychology or equivalent, approval of departmental counseling committee and EDP 661.

EDP 666 PSYCHOLOGY OF CAREER COUNSELING. (3)

EDP 669 DIAGNOSTIC CLASSIFICATION IN SCHOOL PSYCHOLOGY. (3)
Review of theory and research related to individual differences in physical, intellectual, social, and emotional development of preschool and school-aged children and adolescents. Compares psychological and educational approaches to diagnostic classification of such differences. Prereq: PSY 533 or consent of instructor.

EDP 670 PSYCOEDUCATIONAL STRATEGIES OF INTERVENTION. (3)
A general review of and development of basic competence in the major intervention strategies applicable to the amelioration of children’s common learning and adjustment difficulties in the school setting. Prereq: EDP 640, EDP 669 and Admission to School Psychology Program.

EDP 671 SEMINAR IN PSYCHOCEDUCATIONAL CONSULTATION IN SCHOOLS. (3)
A study of the rationale and techniques used in consultation with teachers, parents, administrators and other school personnel for the purpose of both preventing and alleviating the learning and adjustment difficulties of individual or groups of school-aged children. Prereq: Admission to School Psychology Program, advanced standing in a professional educational program or permission of the instructor.

EDP 675 PRACTICUM IN SCHOOL PSYCHOLOGY. (3-6)
Supervised experience in the application of psychoceducational, diagnostic, and remediation techniques, and consultation skills in a school psychology setting. Requires one full day or two half-days per week in on-site activity plus one-hour weekly seminar. May be repeated to a maximum of six hours. Prereq: EDP 570, EDP 640, EDP 669 and EDP 670 plus admission to School Psychology Program.

EDP 676 PRACTICUM IN GIFTED EDUCATION. (3)
Supervised experience in the instruction of gifted children. Requires placement in an approved program designed for serving gifted children plus participation in a weekly supervisory seminar. Lecture, two hours; laboratory, nine hours per week. Prereq: EDP 580, EDC 602, EDP 612 or consent of instructor. (Same as EDC 676.)

EDP 680 PARENT AND CHILD COUNSELING. (3)
Theories, methods, and techniques of counseling psychology as applied to planned interventions with parents and their children. Contemporary approaches to family and child dysfunctioning are studied within a framework of human development; applied practice utilizing simulated problems. Prereq: EDP 600, 652, and 661, or consent of instructor.

*EDP 683 TOPICS IN COUNSELING PSYCHOLOGY. (1-3)
Counseling for special problems with special methods. Topics may vary from semester to semester. Seminar, one-three hours per week. May be repeated to a maximum of 12 credits. Prereq or coreq: EDP 652 and consent of instructor.

EDP 685 ISSUES AND TECHNIQUES IN THE COUNSELING OF WOMEN. (3)
The course is designed to improve students’ knowledge of the special counseling needs of women and to facilitate students’ development of highly skilled techniques for counseling with women. Skill and knowledge areas include such topics as rape, spouse abuse, mastectomy, career, assertiveness, single parenting, and sex discrimination. Prereq: EDP 685, 661, 604 and consent of instructor.

EDP 686 THEORY AND METHODS IN MARRIAGE AND FAMILY THERAPY. (3)
A survey of theories and methods used in marriage and family therapy. Designed to provide students with a knowledge of the theoretical bases for marriage and family therapy, including an introduction to procedures used to assess, diagnose and treat marriage and family dysfunctions. Prereq: FAM 657 or consent of instructor. (Same as FAM 686.)
EDP 701 COGNITIVE-BEHAVIORAL COUNSELING. (3) Theory and applications of cognitive-behavioral techniques. Assessment, intervention, and evaluation procedures are applied to problems treated by cognitive-behavioral counseling. Prereq: EDP 652 and 661 or consent of instructor.

EDP 702 CAREER DEVELOPMENT: RESEARCH, THEORIES AND PRACTICES. (2-3) Overview of theories of career development and current research. Emphasis on use of vocational assessment techniques in counseling and decision-making. (Same as EDV 702.)

EDP 703 SEMINAR IN CLINICAL SUPERVISION. (1-3) An advanced seminar covering theories, issues, methods and techniques in supervision of counseling and psychotherapy. Seminar topics will vary depending on the interests of the professor and students. May be repeated to a maximum of six credits. Prereq: EDP 652, EDP 661, and EDP 665 or equivalent.

EDP 707 MULTIVARIATE ANALYSIS IN EDUCATIONAL RESEARCH. (3) A study of several techniques for the analysis of educational outcomes utilizing multiple variables. Prereq: EDP 660 or equivalent.

EDP 708 INTERNSHIP IN EDUCATIONAL AND COUNSELING PSYCHOLOGY. (3-9) Full-time practice in an operational setting such as a school or government agency, with on-site supervision provided by the host agency and with academic supervision provided by a University faculty member. Practicum: full-time field experience. May be repeated to a maximum of 12 credits. Prereq: Completion of a minimum of one year of graduate study in the department and consent of instructor.

EDP 748 MASTER’S THESIS RESEARCH. (0) Half-time to full-time work on thesis. May be repeated to a maximum of six semesters. Prereq: All course work toward the degree must be completed.

EDP 749 DISSERTATION RESEARCH. (0) Half-time to full-time work on dissertation. May be repeated to a maximum of six semesters. Prereq: Registration for two full-time semesters of 769 residence credit following the successful completion of the qualifying exams.

EDP 762 ORGANIZATION AND OPERATION OF PUPIL SERVICES. (3) A study of the professional roles among counselors, social and health workers, and school psychologists. Content includes supervision of these roles, community participation, in-service education, and evaluation of integrated pupil services. Prereq: Provisional credentials in a pupil services field or consent of instructor.

EDP 765 INDEPENDENT STUDY IN COUNSELING PSYCHOLOGY. (1-4) Independent study course for advanced graduate students who desire to investigate special problems in counseling psychology. May be repeated to a maximum of six credits. Prereq: One year of graduate work in counseling psychology and consent of instructor.

EDP 768 RESIDENCE CREDIT FOR THE MASTER’S DEGREE. (1-6) May be repeated to a maximum of 12 hours.

EDP 769 RESIDENCE CREDIT FOR THE DOCTOR’S DEGREE. (0-12) May be repeated indefinitely.

EDP 776 SEMINAR IN SCHOOL PSYCHOLOGY (Subtitle required). (3) Topical consideration of philosophical, technical, professional and theoretical positions in school psychology theory and practice. May be repeated to a maximum of nine credits under different subtitles. Prereq: Graduate standing in School Psychology or consent of instructor.

EDP 777 SEMINAR IN COUNSELING PSYCHOLOGY. (1-3) Topical consideration of philosophical, technical and theoretical positions in counseling theory and practice. May be repeated to a maximum of six credits. Prereq: Doctoral standing, EDP 665, or consent of instructor.

EDP 778 SEMINAR IN EDUCATIONAL PSYCHOLOGY (Subtitle required). (3) Intensive study of selected topics in human learning and development. Particular emphasis on research topics. Students will design sample studies in their areas of interest. May be repeated to a maximum of nine credits under different subtitles. Prereq: Doctoral standing in the College of Education or consent of instructor.

EDP 782 INDEPENDENT STUDY IN EDUCATIONAL PSYCHOLOGY. (1-3) Independent study course for advanced graduate students who desire to investigate special problems and conduct research in educational psychology. May be repeated to a maximum of 12 credits. Prereq: One year of graduate work in educational psychology and consent of instructor.

EDS 357 INITIAL PRACTICUM IN SPECIAL EDUCATION. (1) An introductory supervised field experience for special education majors. Students will participate in two special education programs as teacher aides. Placements will include public schools and other agencies serving children with disabilities. May be repeated to a maximum of three credits. Lecture, one-hour; field experience, three hours per week. Prereq or concurrent: EDS 375.

EDS 375 INTRODUCTION TO EDUCATION OF EXCEPTIONAL CHILDREN. (3) An introduction to the various contemporary areas of special education. Topics include special education diagnostic categories, programming, service delivery models, career education, child advocacy and litigation affecting public education for students with disabilities.

EDS 395 INDEPENDENT STUDY IN SPECIAL EDUCATION. (1-6) An independent study course for undergraduate students with an interest in a specific problem in special education. Offered by appointment.

EDS 459 STUDENT TEACHING IN SPECIAL EDUCATION. (3-12) Supervised student teaching experience utilizing the special techniques used in working with individuals with exceptional educational problems such as speech handicaps, physical handicaps, visual impairments, hearing disabilities, neurological impairments (learning disabilities), mental retardation, and the gifted. To be offered only on a pass-fail basis. Prereq: Must complete the published College requirements for admission to student teaching; admission to the Teacher Education Program or permission of instructor.

*EDS 510 EARLY CHILDHOOD SPECIAL EDUCATION. (3) An overview of the field of early childhood special education including discussions of historical and empirical support for providing early intervention services, screening, assessment, instructional programming, integration of children with and without disabilities, family involvement, and service delivery models. Emphasis is placed on assessing and promoting attainment of cognitive, language, social, self-help, and motor skills. Prereq: EDS 375 or EDP 203 or consent of instructor.

*EDS 511 SPEECH-LANGUAGE DEVELOPMENT AND DISORDERS FOR THE SEVERELY HANDICAPPED. (3) An introduction to communication development and intervention for language disordered individuals whose language age is at or below four years, including cognitive, social, auditory, visual, and motor components. Topics include prerequisites for language, normal communication development, evaluation of language functioning, and approaches to altering communication behavior. Prereq: CD 277 or EDS 375 or consent of instructor. (Same as CD 511).

*EDS 512 SPEECH-LANGUAGE DEVELOPMENT AND DISORDERS FOR THE MILDLY HANDICAPPED. (3) An introduction to the characteristics of receptive and expressive language disorders in language-disordered children whose language age is four years or higher, including auditory, visual, cognitive, and motor components. Topics include language development, language disorders, language evaluation, and techniques for receptive and expressive language stimulation. Prereq: CD 277 or EDS 375 or permission of instructor. (Same as CD 512).

*EDS 513 LEGAL AND PARENTAL ISSUES IN SPECIAL EDUCATION. (3) A review of pertinent legislation concerning human and constitutional rights and parental issues related to persons with disabilities. Teachers’ specific responsibilities and liabilities are described and related to current requirements for development of appropriate educational programs. Emphasis is given to how, through active parent participation, teachers can facilitate each student’s developmental progress. Their resources and methods for dealing with the problems confronted by parents of exceptional children are considered. Prereq: EDS 375 or consent of instructor.
EDS 516 PRINCIPLES OF BEHAVIOR MANAGEMENT AND INSTRUCTION FOR EXCEPTIONAL LEARNERS. (3)
An overview of educational settings in which special educators work and of basic principles of applied behavior analysis and modification which employ social learning theory and operant conditioning models. Emphasis is placed on designing individualized learning environments, selecting and implementing behavior management strategies, writing behavioral objectives, and performing task analyses. Prereq: EDS 375 or permission of the instructor.

*EDS 517 PROSTHETICS FOR CHILDREN WITH DISABILITIES. (3)
A general introduction to the theory, need, and use of prosthetic devices in the classroom. Review of physical disabilities and basic operation, maintenance, and troubleshooting techniques will be presented. Service personnel typically associated with the fitting, training in the use of and repair of prosthetic devices will be discussed. Students will be required to simulate a disability and use a prosthetic device. Prereq: EDS 375 or permission of instructor.

*EDS 520 SURVEY OF SEVERE DEVELOPMENTAL DISABILITIES. (3)
Introductory course surveying the medical and behavioral characteristics of children and youth with severe disabilities. Other topics will include the historical, social, political, economic, and legal issues pertaining to the education and treatment of persons with severe disabilities. Prereq: Consent of instructor and course in applied behavior analysis.

*EDS 527 CHARACTERISTICS OF INDIVIDUALS WITH ORTHOPEDIC AND NEUROLOGICAL DISABILITIES. (3)
A survey of causes, treatment, and educational implications of physical and neurological disabilities in school age children. Attention given to rehabilitation and life adjustment problems of individuals with single and multiple disabilities.

*EDS 528 EDUCATIONAL ASSESSMENT FOR STUDENTS WITH MILD DISABILITIES. (3)
Procedures for administering formal and informal tests to determine specific educationally relevant strengths and deficits of children with learning and behavior disorders. The characteristics of children with learning and behavior disorders are surveyed, as they relate to special education programming. Lecture, three hours; field experience, two hours. Prereq: EDS 375 and admission to the Teacher Education Program; or consent of instructor.

*EDS 529 EDUCATIONAL PROGRAMMING FOR STUDENTS WITH MILD DISABILITIES. (3)
Design, implementation, and evaluation of individualized programs based on the educationally relevant characteristics of children with mild disabilities. Includes educational assessment and programming in reading, math, and language. Prereq: EDC 329, admission to the Teacher Education Program, EDS 513, 516, and 528; or consent of instructor.

*EDS 530 CHARACTERISTICS OF MENTAL RETARDATION. (3)
Special education issues with individuals exhibiting moderate to severe intellectual and developmental disabilities. A critical examination of contemporary research with regard to the educational, behavioral, developmental issues of individuals exhibiting moderate to severe intellectual and developmental disabilities. Issues and research describing the full educational inclusion and community integration of persons with severe intellectual and developmental disabilities will be addressed. Lecture, three hours; field experience, three hours.

*EDS 548 ADAPTIVE BEHAVIOR ASSESSMENT AND CURRICULUM DESIGN FOR MODERATE INTELLECTUAL AND DEVELOPMENTAL DISABILITIES. (3)
Educational and adaptive behavior assessment and curriculum prescription for individuals exhibiting moderate intellectual and developmental disabilities. The course participant will acquire skills in the use of current formal and informal educational and adaptive behavior assessment procedures for use in prescribing curriculum, instructional, behavioral intervention with individuals exhibiting moderate intellectual and developmental disabilities. Specific attention will be focused on procedures for using assessment data and curriculum prescription that enhance the full inclusion of school age individuals with disabilities with their non-disabled peers. Lecture, three hours; field experience, four to six hours per week. Prereq: EDS 516, 530; or consent of instructor.

*EDS 549 ADVANCED PRACTICUM METHODS IN MODERATE INTELLECTUAL AND DEVELOPMENTAL DISABILITIES. (4)
The course participant will serve as a teacher aide in a classroom or other service delivery setting under the supervision of a person certified in either the Trainable Mentally Handicapped (TMH) or Severely/Profoundly Handicapped (S/PH) areas. Course requirements include application of direct observation, formal and informal assessment of pupil performance, clinical writing and instructional and behavioral intervention in both individualized and small group settings. Practicum settings used by course participants will model best practices with regard to instruction, behavior management, and the full inclusion of persons with moderate intellectual and developmental disabilities with their non-disabled peers. Lecture, two hours; field experience, six to eight hours per week. Prereq: Admission to the Teacher Education Program, EDS 516, 520, 548; or consent of instructor.

*EDS 550 STUDENT TEACHING FOR MODERATE/SEVERE INTELLECTUAL AND DEVELOPMENTAL DISABILITIES. (6-12)
Student teaching in the low-incidence intellectual and developmental disabilities classroom. Supervised student teaching in a classroom for students classified for educational purposes in Kentucky as “Trainable Mentally Handicapped” or “Severely/Profoundly Handicapped.” To be offered on a letter grade basis only. Prereq: Must complete the published College requirements for admission to student teaching, including admission to the Teacher Education Program; or consent of instructor.

EDS 558 PROBLEMS IN SPECIAL EDUCATION (Variable topic). (1-9)
In-depth study of a current and topical problem or issue in the education of exceptional children and youth. May be repeated to a maximum of nine credits. A title is assigned each time the course is offered.

EDS 570 BEHAVIOR DISORDERS OF EXCEPTIONAL CHILDREN. (3)
The behavior problems of exceptional children and youth are considered in the context of normal child development. A survey of the major categories of behavior disorders includes identification, description, and etiology, with material drawn from clinical, theoretical, and research sources. Approaches to remediation cover both community resources and the roles of various professional personnel. Prereq: EDS 375 or equivalent.

*EDS 589 FIELD EXPERIENCES WITH CHILDREN WITH MILD DISABILITIES. (3)
Supervised preservice teaching experiences with students having learning and behavior disorders, including observational and practical experience with public school children at least at two different special education sites. Approximately two hours lecture-discussion and two three-hour observation and/or practica per week. Prereq: EDS 513, 516, 528, admission to the Teacher Education Program; or consent of instructor. Must take concurrently with EDS 529.

EDS 600 SURVEY OF SPECIAL EDUCATION. (3)
A survey of current status of the field of special education. Emphasis is on analysis of the major research literature pertaining to exceptional children and their education. Prereq: Graduate standing.

EDS 601 BEHAVIORAL MANAGEMENT OF EXCEPTIONAL CHILDREN. (3)
Principles of behavioral management are reviewed. Techniques of observation, recording, and implementation of management programs with exceptional children are stressed through case work with individuals and groups of children. Lecture, two hours; laboratory, two hours. Prereq: EDS 516 or equivalent.

EDS 602 ADMINISTRATION AND SUPERVISION IN SPECIAL EDUCATION. (3)
The organization, management and supervision of programs for exceptional children at the local, state and national levels. Roles and functions of the special education administrator are considered. Experiences drawn from special residential, private and public day schools are studied. Prereq: Certification in special education; six hours of course work in educational administration and supervision.

EDS 603 BEHAVIORAL CONSULTATION IN THE SCHOOLS. (3)
Principles and techniques of behavioral consulting with classroom teachers and other school personnel, with particular focus on supporting handicapped children in mainstream education programs. The consultant’s role in providing indirect service to children, through inservice teacher training and consultation, is emphasized. Lecture, two hours; laboratory, two hours. Prereq: EDS 601, or equivalent; EDP 671 (may be taken concurrently); or permission of instructor.
EDS 610 EDUCATIONAL EVALUATION OF EXCEPTIONAL CHILDREN.
An intensive study of, and laboratory experience in, the assessment of educational problems of exceptional children. Special emphasis is given to the relationship of physical, intellectual, emotional and social handicaps to performance in the individual or group setting. Lecture, two hours; laboratory, two hours. Prereq: EDP 522 and consent of instructor, EDS 528 or equivalent.

EDS 611 EDUCATIONAL REMEDIATION OF LEARNING DISABILITIES OF EXCEPTIONAL CHILDREN.
The study of, and laboratory experience in, the remediation of educational problems of exceptional children. Attention is given to the amelioration of learning disabilities in individual cases. Lecture, two hours; laboratory, two hours. Prereq: EDS 529 or equivalent and EDS 610 or consent of instructor.

EDS 612 ADVANCED PRACTICUM IN SPECIAL EDUCATION.(3-6)
Intensive clinical experience with exceptional children in day and residential schools, hospitals and private agencies. Students engage in prescriptive teaching with handicapped children in individualized, small group and special class settings. Laboratory, 6-12 hours per week. Prereq: Graduate standing; major in special education.

EDS 620 INSTRUCTIONAL PROGRAMMING IN EARLY CHILDHOOD SPECIAL EDUCATION.
An in-depth study of the rationale and research history of the early education of exceptional children. A wide variety of assessment tools commonly used in the education of young handicapped children will be presented, used and discussed. Individualized program planning based on test results and techniques for working with groups of exceptional children will be presented, implemented and discussed. Prereq: EDS 375 or 600 and EDS 510 or equivalent or permission of instructor.

EDS 621 ISSUES IN EARLY CHILDHOOD EDUCATION OF THE HANDICAPPED.
Students will review, discuss and participate in supervised practicum experiences related to the preparation of special educators in classrooms. Field work will include observation of sites of special education programs, instruction in the diagnosis and planning of learning disabilities in children, parent-child interactions, student advising, resource identification and utilization and program evaluation. Prereq: Admission to the EDS or Ed.D. program in special education or consent of instructor.

EDS 623 PRACTICUM IN EARLY CHILDHOOD EDUCATION OF THE HANDICAPPED.
This course will provide supervised field experience in preparation of teachers or supervisors in early childhood education of the handicapped. May be repeated to a maximum of nine credit hours. Laboratory: Nine clock hours per credit hour. Prereq: Admission to Master’s Program in Special Education or permission of instructor and EDS 620.

EDS 630 METHODS FOR TEACHING THE SEVERELY HANDICAPPED.
An intensive study of the principles and procedures used in programming learning activities for severely retarded/multiply handicapped students. Topical areas include the acquisition of stimulus control and programming for generalization and maintenance of induced behavior change. Lecture, three hours; laboratory, nine hours last 10 weeks of semester. Prereq: Course in applied behavior analysis and consent of instructor.

EDS 631 BASIC SKILL TRAINING FOR THE SEVERELY HANDICAPPED.
Intensive review of instructional programs designed for use with severely retarded/multiply handicapped students. Emphasis is on developing learning activities in a classroom setting with severely mentally handicapped children. To be taken concurrently with EDS 630. Lecture, three hours; laboratory, nine hours last 10 weeks of semester. Prereq: Consent of instructor.

EDS 632 ADVANCED PRACTICUM IN SEVERE DEVELOPMENTAL DISABILITIES.
Intensive educational experience with severely retarded/multiply handicapped persons in educational, residential and hospital settings. Site and practicum responsibilities will be based on students’ competencies and area of interest. May be repeated to a maximum of 20 credits. Prereq: Graduate standing and consent of instructor.

EDS 633 SINGLE SUBJECT RESEARCH DESIGNS IN SPECIAL EDUCATION.
Principles and methods in designing single subject research with severely retarded/multiply handicapped students in educational settings. Students will be required to design and defend a research proposal. Prereq: Consent of instructor and one course in applied behavior analysis.

EDS 701 PROSEMINAR FOR SPECIAL EDUCATION LEADERSHIP PERSONNEL.
Study of issues and topics affecting the preparation of special education personnel and of research issues involving handicapped persons and educational programs. May be repeated to a maximum of six credits. Lecture, two hours per week. Prereq: Admission into the Ed.S. or Ed.D. program.

EDS 710 SEMINAR IN MILD LEARNING AND BEHAVIORAL DISORDERS.
Advanced study of issues related to mild learning and behavior disorders in children, including etiology, assessment, intervention, theories and contemporary research findings. Prereq: Admission to the Ed.S. or Ed.D. program in special education or consent of instructor.

EDS 711 SEMINAR IN SEvere DEVELOPMENTAL DISABILITIES.
Advanced study of issues related to severe developmental disabilities, including problems of identification and assessment, program alternatives, curricula, theories, and contemporary research findings. Prereq: Admission to the Ed.S. or Ed.D. program in special education or consent of instructor.

EDS 712 SEMINAR IN SPECIAL EDUCATION PROFESSIONAL SERVICES.
Study of procedures for providing special education professional services including consultation, technical assistance, continuing education programs, professional organization development, committee and advisory board involvement, professional writing and editing, leadership training, and funding proposal development. Prereq: Admission to the Ed.S. or Ed.D. program in special education or consent of instructor.

EDS 720 SEMINAR IN SPECIAL EDUCATION TEACHER PREPARATION.
Study of the design and implementation of special education teacher preparation programs, including syllabus development, organization of class presentations, instructional alternatives, scheduling, student assessment, professor-student interactions, student advising, resource identification and utilization and program evaluation. Prereq: Admission to the EDS or Ed.D. program in special education or consent of instructor.

EDS 721 PRACTICUM IN SPECIAL EDUCATION PERSONNEL PREPARATION.
Supervised practicum experiences related to the preparation of special education teachers, including practice in delivering lectures, conducting class discussions, leading seminars, directing independent studies, guiding student research projects, demonstrating instructional methods and materials, supervising special education student teachers and advising. Laboratory, three-nine hours. May be repeated to a maximum of nine credits. Prereq: Admission to the Ed.S. or Ed.D. program in special education or consent of instructor.

EDS 730 SEMINAR IN SPECIAL EDUCATION ADMINISTRATION.
Administration of special education programs at the local and state levels. Emphasis is on program planning, staffing, fiscal management and program evaluation. Prereq: EDS 602 and admission to the Ed.S. or Ed.D. program in special education or consent of instructor.

EDS 731 PRACTICUM IN SPECIAL EDUCATION ADMINISTRATION.
Supervised practicum experiences related to the administration of special education programs at the local and state levels, and project management, including staff management and development, program planning, evaluation, fiscal management, organization, reporting, communications, and coordination. Laboratory, three-nine hours. May be repeated to a maximum of nine credits. Prereq: Admission to the Ed.S. or Ed.D. program in special education administration or in certification program for special education administrators.

EDS 748 MASTER’S THESIS RESEARCH.
Half-time to full-time work on thesis. May be repeated to a maximum of six semesters. Prereq: All course work toward the degree must be completed.

EDS 749 DISSERTATION RESEARCH.
Half-time to full-time work on dissertation. May be repeated to a maximum of six semesters. Prereq: Registration for two full-time semesters of 769 residence credit following the successful completion of the qualifying exams.

EDS 768 RESIDENCE CREDIT FOR THE MASTER’S DEGREE.
May be repeated to a maximum of 12 hours.

EDS 769 RESIDENCE CREDIT FOR THE DOCTOR’S DEGREE.
May be repeated indefinitely.
EDS 770 SEMINAR IN SPECIAL EDUCATION (Variable topic). (1-3) Study of philosophy, principles, trends and research in education of exceptional children. Students will carry on an extensive study of a problem dealing with education of the exceptional child. May be repeated to a maximum of nine credits.

EDS 789 INDEPENDENT STUDY IN SPECIAL EDUCATION. (1-6) An independent study course for advanced graduate students with an interest in a specific problem in special education. Class hours by appointment. Prereq: Minimum of 12 semester hours in graduate work and consent of instructor.

EDS 790 RESEARCH TECHNIQUES IN SPECIAL EDUCATION. (3) A study of the basic research techniques and their application to special education. Unique problems in special education will be discussed with emphasis on designing and conducting a research study. Computer usage will be discussed and students encouraged to use the computer as a research tool. Prereq: 12 graduate semester hours in special education including EDP 657 or equivalent.

EDU 101 THE TEACHER IN AMERICAN SCHOOLS. (2-3) An introductory course in education for freshman and sophomore students. Considers basic information about the teaching profession and the role of the school in a democratic society. The student will begin to study individual differences, the learning process, the school program, the role of the teacher in the school, and current educational issues. Affords opportunity for planning individual programs of teacher education. (Offered in Community College System only.)

EDU 300 SPECIAL COURSE. (1-3) This course is being proposed to provide an opportunity for offering experimental, topical or interdisciplinary courses on a one-time or two-time basis without creating a permanent course. The description will be submitted each time the course is offered. Prereq: Permission of instructor.

EDU 305 CONTEMPORARY ISSUES FACING THE AT-RISK SCHOOL-AGE/ADOLESCENT CHILD. (3) To provide background information, experience, and skills for undergraduate students to interact with elementary and middle school children in a consulting role. Special emphasis will address the needs of the “at-risk” student population. The “at-risk” student is associated with families with incomes below the poverty level, as well as other significant problems which plague contemporary society—e.g., homelessness, child abuse/neglect, single parent homes, non-English speaking parents, fetal alcohol or substance abuse syndrome, mentally and/or physically handicapped parents or siblings, and high incidence of academic achievement declines and dropout rates. Lecture, two hours; laboratory, two hours per week. Prereq: Consent of instructor.

EDU 405 FOUNDATIONS OF PEDAGOGICAL THEORY AND PRACTICE IN THE SECONDARY SCHOOL. (0-9) Students will participate with other secondary education majors in a variety of disciplines in the reflective study of adolescent behavior, secondary school curriculum, school law, learning theory, learning styles, effective teaching and learning, instructional technology, working with special populations, cultural diversity in the schools, school context, and professional development. Students will spend time in the schools applying concepts. May be repeated to a maximum of nine credits. Lecture, 3-9 hours; laboratory, 6-18 hours per week. Prereq: Admission to the Teacher Education Program and the M.A./M.S. in Education (Initial Certification Option–Secondary Education).

EDU 745 INTERDISCIPLINARY INSTRUCTION IN THE SECONDARY SCHOOL. (0-3) Students will participate with other secondary education majors from a variety of disciplines in the reflective study of the context of schooling, classroom management, individual student differences, and professional development. Students will be in the schools applying concepts on a full-time basis. May be repeated to a maximum of three credits. Lecture, 1-3 hours; laboratory, 3-6 hours per week. Prereq: Admission to the Teacher Education Program and the M.A./M.S. in Education (Initial Certification Option–Secondary Education).

AGRICULTURAL EDUCATION

#EDV 211 INTRODUCTION TO TRAINING AND DEVELOPMENT. (3) An orientation to the field of training and development from the human resource management perspective. Visits to organizations with training programs and supervised “shadowing” experiences required.

#EDV 301 PLANNING, DESIGN, AND EVALUATION OF VOCATIONAL TRAINING. (3) To provide the student with a practical introduction to the major functions of the training professional: planning, designing, and evaluating training programs for the workplace. Prereq: EDV 211.

EDV 362 FIELD EXPERIENCES IN SECONDARY EDUCATION. (1) Supervised experiences in schools and agencies of secondary education. Required of all majors in Secondary Teacher Education Programs in the Department of Vocational Education. Includes field trip, inspection of programs and professional organizations. Prereq: Admission to the Teacher Education Program.

EDV 370 STUDENT TEACHING IN VOCATIONAL AGRICULTURE. (9) Practical application of methods in teaching various phases of vocational agriculture. To be taken concurrently with EDV 580, 581 and 583. Laboratory, 20 hours. Offered on a pass-fail basis only. Prereq: Second semester senior; admission to the Teacher Education Program or permission of instructor.

†EDV 393 STUDENT TEACHING IN BUSINESS EDUCATION. #EDV 520 THE ADULT LEARNER IN VOCATIONAL SETTINGS (3) An overview of adult education practices and their relevance to adult learning in the work setting. Prereq: EDV 211 or consent of instructor.

EDV 580 MATERIALS AND METHODS FOR TEACHING VOCATIONAL AGRICULTURE. (3) Designed to develop teacher competency in methods of teaching with emphasis on the problem-solving procedure and use of demonstrations, field trips, and audiovisual materials. Evaluation of teaching-learning is emphasized. A study of facilities and instructional materials needed by a department of vocational agriculture is made. Prereq: Admission to the Teacher Education Program or permission of instructor.

EDV 583 EXPERIENCE PROGRAMS IN VOCATIONAL AGRICULTURE. (3) Designed to develop teacher competencies to guide students to select, plan, carry out, and evaluate supervised experience programs in vocational agriculture, both production and off-farm. Prereq: Second semester senior; admission to the Teacher Education Program or permission of instructor.

EDV 679 ADULT EDUCATION IN AGRICULTURE. (3) Preparation for teaching adult classes in agriculture with emphasis on improvement of established agricultural businesses including farming, organization of classes, development of curriculum, and methods of teaching.

BUSINESS EDUCATION

EDV 362 FIELD EXPERIENCES IN SECONDARY EDUCATION. (1) Supervised experiences in schools and agencies of secondary education. Required of all majors in Secondary Teacher Education Programs in the Department of Vocational Education. Includes field trip, inspection of programs and professional organizations. Prereq: Admission to the Teacher Education Program.

†EDV 393 STUDENT TEACHING IN BUSINESS EDUCATION.

EDV 511 TEACHING SECRETARIAL SUBJECTS. (1) Effective teaching in shorthand and business communications areas. Prereq: Admission to the Teacher Education Program or permission of instructor.

EDV 512 TEACHING ACCOUNTING SUBJECTS. (1) Methods and materials used in teaching accounting subjects. Prereq: Admission to the Teacher Education Program and six hours of accounting or consent of instructor.

KEY:  # = new course     * = course changed    † = course dropped
EDV 513 **TEACHING TYPEWRITING AND CLERICAL PRACTICE.**
A study of effective teaching in typewriting and clerical office practice including the machines commonly used in business offices. Prereq: Admission to the Teacher Education Program or permission of instructor.

EDV 514 **TEACHING GENERAL BUSINESS SUBJECTS IN THE SECONDARY SCHOOLS.**
The aims and purposes of the general business course are studied. Analysis is made of the objectives of the general subjects, and methods and materials used in teaching them are emphasized. Prereq: Admission to the Teacher Education Program or permission of instructor.

EDV 615 **PROBLEMS IN BUSINESS EDUCATION.**
A study of advanced problems of interest to business teachers such as testing in business subjects, guidance, job studies, placement and follow-up, equipment, and supervision. May be repeated three times for a maximum of 12 credits.

EDV 626 **CLASSIFICATION AND POSSIBLE USE OF COMMUNITY RESOURCES IN BUSINESS EDUCATION.**
Course provides for community analysis, and the development of possible ways and means to supplement the business education course in the secondary school with a study of vital community resources.

**DISTRIBUTIVE EDUCATION**

EDV 362 **FIELD EXPERIENCES IN SECONDARY EDUCATION.**
Supervised experiences in schools and agencies of secondary education. Required of all majors in Secondary Teacher Education Programs in the Department of Vocational Education. Includes field trip, inspection of programs and professional organizations. Prereq: Admission to the Teacher Education Program.

EDV 517 **DETERMINING TEACHING CONTENT IN DISTRIBUTIVE EDUCATION.**
Course construction in the field of distributive education. This course is planned to meet the needs of persons engaged as instructors in the field of distributive education. May be repeated for a maximum of six credits. Prereq: Admission to the Teacher Education Program or permission of instructor.

EDV 528 **TECHNIQUE OF TEACHING DISTRIBUTIVE EDUCATION.**
A study of the methods of teaching as applied to distributive education. The purpose of the course is to train prospective teachers to teach in the field of distributive education. May be repeated for a maximum of six credits. Prereq: Admission to the Teacher Education Program or permission of instructor.

**HOME ECONOMICS EDUCATION**

EDV 362 **FIELD EXPERIENCES IN SECONDARY EDUCATION.**
Supervised experiences in schools and agencies of secondary education. Required of all majors in Secondary Teacher Education Programs in the Department of Vocational Education. Includes field trip, inspection of programs and professional organizations. Prereq: Admission to the Teacher Education Program.

EDV 365 **STUDENT TEACHING IN HOME ECONOMICS.**
Practical application of methods in teaching various phases of home economics. Offered on a pass-fail basis only. Prereq: EDV 586; admission to the Teacher Education Program or permission of instructor.

EDV 586 **METHODS/CURRICULUM DEVELOPMENT IN HOME ECONOMICS EDUCATION.**
A course emphasizing methods of teaching, curriculum development, utilization of resources, and professional responsibilities of the teacher as they apply to vocational home economics. Prereq: Admission to the Teacher Education Program or permission of instructor.

EDV 588 **HOME ECONOMICS EDUCATION PROGRAMS.**
History, organization, and administration of home economics education programs. Study of career opportunities for home economics educators.

EDV 590 **PROBLEMS IN HOME ECONOMICS EDUCATION.**
Problems in teaching home economics for high school students and adults. May be repeated twice for a maximum of nine credits. Prereq: Admission to the Teacher Education Program or permission of instructor.

EDV 684 **CURRENT TRENDS IN HOME ECONOMICS EDUCATION.**
Class work in current trends and significant developments in home economics education. May be repeated to a maximum of nine credits.

EDV 685 **HOME ECONOMICS CURRICULUM CONSTRUCTION.**
A study of the underlying principles of curriculum building for junior and senior high school and adult education in home economics. Prereq: EDV 586, 362.

EDV 686 **EVALUATION IN HOME ECONOMICS EDUCATION.**
A course to acquaint teachers of home economics with techniques used in measuring attainment in home economics in the junior and senior high school and college. Prereq: Teaching experience.

**INDUSTRIAL EDUCATION**

EDV 109 **INSTRUCTIONAL MATERIAL IN INDUSTRIAL EDUCATION.**
Components of a comprehensive course of study are identified and students engage in the validation and preparation of materials to be used in teaching. Emphasis is placed on planning and preparing those materials that individualize instruction in the vocational industrial course.

EDV 110 **PRINCIPLES OF INDUSTRIAL TEACHING.**
Designed for the beginning vocational industrial teacher. Study is made of various accepted teaching procedures and class managerial activities with which the new shop teacher must be familiar.

EDV 220 **PRACTICUM IN INDUSTRIAL EDUCATION.**
Observation and experience in teaching industrial occupations in area vocational schools and extension centers. The course emphasizes planning, methods, utilization of resources, safety education, teaching procedures, and evaluation. Lecture, one hour; laboratory, 9-30 hours.

IND 222 **OCCUPATIONAL INTERNSHIP FOR INDUSTRIAL TEACHERS.**
Coordinated occupational experience in an industrial environment for persons desiring to become industrial teachers. Emphasis is given to the development of occupational competence, trade theory, meeting production schedules, employer-employee relations and industrial safety in the area of certification. Laboratory, 10 hours. May be repeated to a maximum of nine credits. Prereq: Two years of industrial experience in a single occupation or consent of instructor.

IND 226 **BASIC COMPETENCIES IN INDUSTRIAL OCCUPATIONS.**
Skill development experience for new teachers and those desiring to become teachers of industrial occupations. Emphasis is given to the development of work skills in laboratory situations, selection of proper tools and equipment, and safe work habits in the area of certification. May be repeated to a maximum of nine credits. Lecture, three hours; laboratory, three hours.

IND 228 **ADVANCED COMPETENCIES IN INDUSTRIAL OCCUPATIONS.**
A study of advanced theories and practices in skills of industrial-technical occupations for present teachers and those desiring to become teachers. Emphasis is given to providing laboratory experience to attain competence necessary for teaching industrial competencies in the area of certification. May be repeated to a maximum of nine credits. Lecture, three hours; laboratory, three hours. Prereq: IND 226.

EDV 352 **STUDENT TEACHING FOR INDUSTRIAL AND EDUCATIONAL TRAINING DIRECTORS.**
Designed to give the student practical experience through observation, planning, teaching, and evaluating procedures. Offered on a pass-fail basis only.

EDV 362 **FIELD EXPERIENCES IN SECONDARY EDUCATION.**
Supervised experiences in schools and agencies of secondary education. Required of all majors in Secondary Teacher Education Programs in the Department of Vocational Education. Includes field trip, inspection of programs and professional organizations. Prereq: Admission to the Teacher Education Program.

EDV 518 **METHODS IN INDUSTRIAL EDUCATION.**
A study of various principles and concepts of learning and how they relate to teaching in vocational industrial education. Emphasis is given to methods and techniques used in shop teaching and how these activities are associated with the principles and concepts of learning. May be repeated once to a maximum of four credits.
IND 525 SUPERVISED WORK EXPERIENCE IN BUSINESS OR INDUSTRY. (3)
For students planning careers as vocational teachers and directors. Includes education and experience under the supervision of college personnel and personnel in business and industry. May be repeated to a maximum of 12 hours.

EDV 537 SPECIAL PROBLEMS IN INDUSTRIAL EDUCATION. (1-3)
A study of the problem-solving process and its relationship to the solutions of the problems faced by vocational industrial teachers. Students learn to identify teaching problems and engage in activities that lead to their solutions. May be repeated to a maximum of six credits.

EDV 538 PROBLEMS OF THE COORDINATOR IN VOCATIONAL EDUCATION. (2-3)
A course to prepare coordinators of vocational education programs, including planning of local or area programs, use of advisory committees, selection of instructional materials and equipment, organizing instructional programs, and overall planning and operating of the program. May be repeated to a maximum of six credits.

EDV 549 DISSERTATION RESEARCH. (0)
Prereq: All course work toward the degree must be completed.

EDV 749 DISSERTATION RESEARCH. (0)
Half-time to full-time work on dissertation. May be repeated to a maximum of six credits.
Prereq: Registration for two full-time semesters of 769 residence credit following the successful completion of the qualifying exams.

EE Electrical Engineering

EE 101 ELECTRICAL ENGINEERING PROFESSIONS SEMINAR. (1)
Introductory seminar on professional practice, growth, conduct and ethics. Presentations on computers in electrical engineering and the University computer system. Presentations from career engineers and professional societies and reading assignments in professional journals. Pass/fail only.

EE 211 CIRCUITS I. (4)
Fundamental laws and principles for linear circuits whose elements consist of passive and active components used in present day engineering practice. Determination of the sinusoidal steady state responses using the algebra of complex numbers. Lecture, three hours; recitation-laboratory demonstration, one two-hour session. Prereq: MA 114; prereq, or concur: PHY 232, 242.

EE 221 CIRCUITS II. (3)

EE 222 ELECTRICAL ENGINEERING LABORATORY I. (2)
Laboratory exercises in the use of measuring instruments. Experiments in R-L-C circuit analysis. Lecture, one hour; laboratory, three hours. Prereq or concur: EE 221.
EE 280 DESIGN OF LOGIC CIRCUITS. (3)
Boolean algebra; combinational logic circuits, synchronous sequential circuits; asynchronous sequential circuits; design problems using TTL integrated circuits. Prereq: CS 222.

EE 305 ELECTRICAL CIRCUITS AND ELECTRONICS. (3)
A study of DC and AC electrical circuits, electronics principles and applications to instrumentation. Prereq: PHY 232, MA 114.

EE 306 ELECTRICAL CIRCUITS AND MACHINERY. (3)
A study of AC and DC electrical circuits, single and three-phase systems, AC and DC machines and their control. Prereq: MA 114, PHY 232.

EE 307 CIRCUIT ANALYSIS WITH APPLICATIONS. (4)
A service course covering electrical engineering principles for engineering or science students with majors outside of electrical engineering. Topics include circuit analysis, applications to electromechanical machines and analog and digital electronics. Not available to electrical engineering majors. Prereq: PHY 232.

EE 380 MICROCOMPUTER ORGANIZATION. (3)
Hardware and software organization of a typical computer; machine language and assembler language programming, interfacing peripheral devices, and input-output programming; real-time computer applications, laboratory included. Prereq: EE 280 or CS 245. (Same as CS 380.)

EE 395 INDEPENDENT WORK IN ELECTRICAL ENGINEERING. (1-6)
Special research and problems for individual students who are capable of pursuing independent investigations. May be repeated to a maximum of six credits. Prereq: Consent of instructor.

EE 402G ELECTRONIC INSTRUMENTATION AND MEASUREMENTS. (3)
Elementary laboratory treatment of electronic circuits. Topics will include AC circuits, filters, simple circuits using transistors and other semiconductor devices, simple treatment of operational amplifiers, and an introduction to digital circuits. Lecture, two hours; laboratory, three hours. Prereq: EE 305 or PHY 242 or consent of instructor. (Same as PHY 402G.)

EE 415G ELECTROMECHANICS. (3)
Study of electric machines and electromechanical systems. Prereq: EE 221 with a C or better and PHY 232.

EE 416G ENERGY CONVERSION LABORATORY. (2)
Laboratory practice and experimental studies related to EE 415G. Lecture one hour; laboratory, three hours. Prereq or concur: EE 415G.

EE 421G SIGNALS AND SYSTEMS I. (3)
An introduction to the modeling and analysis of signals and systems. Topics include convolution, Fourier series, Fourier Transform bandwidth, basic filter design, modulation techniques, random variables and random processes and spectral density. Prereq: MA 214 and a "C" or better in EE 221.

EE 422G SIGNALS AND SYSTEMS II. (3)
A continuation of the analysis of signals and linear systems with an emphasis on feedback and discrete-time systems. Topics include the Laplace and Z-transforms, frequency domain modeling techniques, feedback principles, state variables, sampling and digital filter design. Prereq: EE 421G, engineering standing.

EE 461G INTRODUCTION TO ELECTRONSICS. (3)
Analysis and design of electronic circuits incorporating nonlinear electronic elements such as transistors, FET's, and vacuum tubes. Applications to amplifiers. Prereq: A grade of C or better in EE 221.

EE 462G ELECTRONIC CIRCUITS LABORATORY. (2)
Experimental exercises in the design and analysis of useful electronic circuits incorporating semiconductor devices: transistors, tunnel and Zener diodes; also, vacuum tubes, integrated circuits and operational amplifiers. Lecture, one hour; laboratory, three hours. Prereq: EE 222, CS 222; prereq or concur: EE 461G.

EE 468G FIELDS AND WAVES. (4)
Applications of electromagnetic theory; electrostatic and magnetostatic fields; Maxwell's field equations; plane waves; transmission lines and waveguides; antennas and radiation. Prereq: Engineering standing.

EE 481 LOGICAL DESIGN LABORATORY. (2)
A laboratory involving the design and implementation of logic circuits. Combinational and sequential (both synchronous and asynchronous) design examples using small and medium scale integrated circuits. Lecture, one hour; laboratory, one three-hour session. Prereq: EE 222, EE 280, and a C or better in EE 221.

EE 499 ELECTRICAL ENGINEERING DESIGN
(Subtitle required). (3)
A course for senior students in electrical engineering with an emphasis on the engineering design processes requiring the creative involvement of students in open-ended problems relating to actual designs that are appropriate to the profession of electrical engineering. Prereq: Senior standing in electrical engineering and consent of the course coordinator.

EE 511 INTRODUCTION TO COMMUNICATION SYSTEMS. (3)
An introduction to the basic signal processing operations in communications systems. Topics include frequency and time domain signal and system representation, random signals, modulation, sampling, pulse modulation, information theory. Prereq: EE 421G and engineering standing.

EE 512 DIGITAL COMMUNICATION SYSTEMS. (3)
A treatment of the basic signaling concepts involved in the communication of digital information. Topics include transmission requirements and distortion of digital signals; discrete amplitude, frequency, and phase modulation; error control coding. Prereq: EE 421G and engineering standing or consent of instructor.

EE 517 ADVANCED ELECTROMECHANICS. (3)
Dynamics of electromechanical systems and rotating electrical machines. Applications of electro-magnetic theory to electrical machines. Certain special topics of current interest. Prereq: EE 415G and engineering standing.

EE 518 ELECTRIC DRIVES. (3)
Introduction to common power electronic converters used in electric motor drives. Steady-state analysis methods for electric machines fed by power conditioning converters. Performance prediction of electric machines by electromagnetic field theory and by coupled oil models. Prereq: EE 415G and engineering standing.

EE 522 ANTENNA DESIGN. (3)
Principles of radiation, potential solution to Maxwell's equations for current in empty space, electrically small antennas, antenna arrays, wire antenna principles, introduction to numerical methods, aperture antennas, frequency scaling antennas, receiving properties of antennas, antenna measurement techniques. Prereq: EE 468G and engineering standing.

EE 523 MICROWAVE CIRCUIT DESIGN. (3)
Physical and mathematical descriptions of wave propagation in guided structures; microstrip lines; microwave integrated circuits; passive components; two-terminal devices; four-terminal devices; S-parameter concept; equivalent circuit concept; solid state microwave amplifiers and oscillators. Prereq: EE 468G and engineering standing.

EE 527 ELECTROMAGNETIC COMPATIBILITY. (3)
Design of electronic systems to minimize 1) emission of electromagnetic signals that cause interference in other electronic systems, 2) the susceptibility of that system to electromagnetic signal from other electronic systems, and 3) the susceptibility of that system to its own, internally generated signals. A set of brief laboratory experiments demonstrate the design principles and provide familiarity with modern test equipment. Prereq: EE 468G and engineering standing.

EE 530 ROBOTICS. (3)

EE 537 ELECTRIC POWER SYSTEMS I. (3)
Application of symmetrical components to power system fault studies, calculation of transmission line parameters. Prereq: Engineering standing and consent of instructor.

EE 538 ELECTRIC POWER SYSTEMS II. (3)
Introduction to modern power system practices, basic transient and steady-state stability analysis with emphasis on digital techniques. Prereq: Engineering standing and consent of instructor.

EE 550 SEMICONDUCTOR DEVICE DESIGN. (3)
Theory, development and discussion of equivalent circuit models of transistor devices, negative resistance, semiconductor devices and parametric devices based on electronic processes in solid state elements. High and low frequency, as well as the Ebers-Moll charge control switching models and their application in computerized electronic circuit analysis will be developed. Prereq: EE 461G or equivalent, and engineering standing.

EE 561 ELECTRICAL AND MAGNETIC PROPERTIES OF MATERIALS. (3)
Study of dielectric and magnetic materials. Topics include dielectric relaxation, conduction and breakdown mechanisms, liquid crystals, ferroelectrics, magnetic resonance and relaxation, measurement techniques. Prereq: MSE 212 and PHY 361 or EE 461G or consent of instructor. (Same as MSE 561.)
EE 562 ANALOG ELECTRONIC CIRCUITS. (3) Feedback amplifiers, tuned and untuned amplifiers, oscillators, AM and FM transmitters. Prereq: EE 461G and engineering standing.

EE 564 DIGITAL ELECTRONIC CIRCUITS. (3) Timing, scanning, trigger/logic and pulse circuits; video and broadband R-F amplifiers. Prereq: EE 461G and engineering standing.

EE 565 CIRCUIT DESIGN WITH ANALOG INTEGRATED CIRCUITS. (3) Design of circuits using popular analog integrated circuits such as operational amplifiers, voltage comparators, timers, function generators, voltage/frequency and frequency/voltage converters, digital/analog and analog/digital converters. Lecture; two hours; laboratory, three hours per week. Prereq: EE 461G and 462G.

EE 567 INTRODUCTION TO LASERS AND MASERS. (3) Basic principles of laser action; atomic transitions; population inversion; two and three level systems; optical resonators; pumping methods; applications. Prereq: Engineering standing or consent of instructor. (Same as PHY 567.)

EE 568 FIBER OPTICS. (3) The course presents theory and practice related to (a) fiber optic cable and their fabrication, (b) fiber optic transmitters and detectors, (c) fiber optic communication systems and (d) fiber optic remote sensors. Prereq: EE 468G. (Same as MSE 568.)

EE 571 FEEDBACK CONTROL DESIGN. (3) System representation via transfer function and state variables, root locus analysis; Bode plots; compensation by root-locus and frequency response methods; state variable feedback; sensitivity analysis; tracking via output feedback; digital control systems. Prereq: EE 421G and engineering standing.

EE 572 DIGITAL CONTROL OF DYNAMIC SYSTEMS. (3) Zero and first order hold, theory of analog to digital and digital to analog conversion. Z-transform analysis, discrete state variable analysis, discrete estimation techniques, error analysis of discrete systems. Prereq: EE 422G, engineering standing.

EE 581 ADVANCED LOGICAL DESIGN. (3) Medium-scale and large-scale digital components; register-transferers; bus-structures; controller/process organizations. Design of arithmetic processors and stored-program computers. Microprogramming. Prereq: EE 280 and EE/CS 380.

EE 583 MICROPROCESSORS. (3) A course in the hardware and software of microprocessors. Assembly language programming, address decoding, hardware interrupts, parallel and serial interfacing with various special purpose and integrated circuits. Each student is expected to do homework assignments using microprocessor hardware. This will be arranged by special appointment through the instructor. Prereq: EE 280 and EE/CS 380.

EE 585 FAULT TOLERANT COMPUTING. (3) Fault models in logic networks will be developed and then various testing techniques for detection of faults in logic networks will be discussed. Systematic approach for designing logic networks for testability will be introduced. Self testing and fault tolerant design of logic systems using coding theory will be covered. Prereq: EE 581 or consent of the instructor.

EE 587 MICROCOMPUTER SYSTEMS DESIGN. (3) A course in the design of microcomputer systems for hardware engineers which includes the following topics: use of uncommitted logic arrays in instruction set design; hardware support for operating systems and programming languages; customizing microcomputers for specific execution environments; and control of concurrency. Prereq: EE 581 and EE 583, or consent of instructor. (Same as CS 587.)

EE 595 INDEPENDENT PROBLEMS. (1-3) For electrical engineers. A problem, approved by the chairperson of the department, provides an objective for study and research. May be repeated to a maximum of six credits. Prereq: 2.5 standing and engineering standing.

EE 599 TOPICS IN ELECTRICAL ENGINEERING (Subtitle required). (2-3) A detailed investigation of a topic of current significance in electrical engineering such as biomedical instrumentation, digital filter design, active networks, advanced electrical devices, digital communications, digital electronics. May be repeated to a maximum of six credits, but only three credits can be earned under the same title. A particular topic may be offered at most twice under the EE 599 number. Prereq: Equivalent of two 400-level courses in electrical engineering, consent of instructor and engineering standing.

PREREQUISITE FOR GRADUATE WORK: Students desiring to take any of the following courses should have a thorough working knowledge of chemistry, physics and mathematics. For major work, a candidate must hold a bachelor’s degree in electrical engineering or its equivalent.


EE 602 ELECTROMAGNETIC ENERGY CONVERSION II. (3) Continuation of EE 601 with special reference to energy conversion in nonlinear media; numerical methods; irregular boundaries. Prereq: Consent of instructor.

EE 603 POWER ELECTRONICS. (3) Study of solid-state power electronic devices and their applications in power conditioned electric motor drive systems. Examination of control philosophies, steady-state models, and numerical simulation of characterizing differential equations. Current topics of interest from the literature. Prereq: EE 517 and EE 571 or consent of instructor.

EE 604 SWITCH MODE CONVERTERS. (3) Study of analysis techniques for switching mode converters and associated control practices. Boost, buck, buck-boost, flyback, and Cuk topologies in both continuous and discontinuous conduction modes are presented. Numerical solution, state-space averaging, and linearization techniques are applied to predict performance and formulate transfer characteristics. Prereq: EE 517 or consent of instructor.

EE 605 SYSTEMS FOR FACTORY INFORMATION AND CONTROL. (3) Systems approach to manufacturing. Hardware and software for real time control and reporting. Sensor and actuators, controllers, networks, databases, hierarchical and distributed control, CAD/CAM systems, flexible manufacturing systems, group technology, modeling and simulation of factory operations. Lecture; two hours; laboratory, two hours. Prereq: MFS 505. (Same as MFS 605.)

EE 606 SEMINAR AND PROJECT IN MANUFACTURING SYSTEMS ENGINEERING. (3) A project course for manufacturing systems. Course consists of seminar presentations by outside professionals and faculty and a course project on a realistic manufacturing systems assignment. Lecture; two hours; laboratory, two hours. (Same as ME/MFS 606.)

EE 607 ELECTRIC MACHINE DESIGN. (3) Design principles; specifications; magnetic and electric loadings, and output coefficients; magnetic circuit performance from design; design optimization techniques; sample designs. Prereq: EE 415G or equivalent.

EE 608 ADVANCED TOPICS IN POWER ELECTRONICS (Subtitle required). (3) Study of emerging research and design practices in power electronics circuits and power conditioned electric motor drives. A review and extension of selected topics in the current literature. May be repeated to a maximum of six credits under different subtitles. Prereq: Consent of instructor.

EE 611 DETERMINISTIC SYSTEMS. (3) Concepts of linear systems, singularity functions, convolution and superposition integrals, state-variable method for linear systems, relation between transfer function and state-variable equations, fundamental matrix, state-transition matrix, unit-impulse response matrix, and transmission matrix. Prereq: EE 421G.

EE 612 COMPUTATIONAL ASPECTS OF ROBOTICS. (3) Study of computer hardware and programming issues involved in applying the mathematical equations that describe robotic mechanisms; examples include robot manipulators and legged vehicles. Study of environment-adaptive sensor-integrated control strategies and structures. Prereq: EE 530 or consent of instructor.

EE 613 OPTIMAL CONTROL THEORY. (3) State-space modeling of control systems; variational techniques; system optimization by maximum principle, dynamic programming; Hamilton-Jacobi equations design of linear optimal systems; computational methods for solving boundary value problems. Prereq: EE 611.

EE 614 SAMPLED-DATA CONTROL SYSTEMS. (3) Basic theory of sampling, the pulse-transfer function, Z-transform analysis of sampled-data control systems, modified Z-transforms, general design principles, analysis of multi-rate, variable-rate and nonsynchronized sampled-data systems. Prereq: EE 421G or consent of instructor.

EE 619 PROBLEMS SEMINAR IN OPERATIONS RESEARCH. (3) In this course the student is exposed to the art of applying the tools of operations research to real world problems. The seminar is generally conducted by a group of faculty members from the various disciplines to which operations research is applicable. Prereq: MA 617 and STA 525 or consent of instructor. (Same as OR/STA 619 and MA 613.)
EE 621 ELECTROMAGNETIC FIELDS. (3) Development of electromagnetic field theory from the basic postulates of Maxwell’s equations in differential and integral forms, solution to static, quasistatic, and wave-propagation problems. Radiation from dipole antenna elements. Prereq: EE 468G.

EE 622 ADVANCED ELECTRODYNAMICS. (3) Solution methods for applied electrodynamics problems; uniqueness, equivalence, duality, reciprocity; linear space methods; wave solutions in separable coordinate systems; classical problems in cartesian, cylindrical, and spherical coordinates. Prereq: EE 468G.

EE 627 MULTICONDUCTOR TRANSMISSION LINES. (3) Analysis of electromagnetic coupling in multiconductor transmission lines. Emphasis on modeling the line for the purposes of predicting crosstalk and incident field effects. Applications to interference prediction, power transmission line transients, and synthesis of microwave filters and circuits. Prereq: EE 468G or consent of instructor.

EE 630 DIGITAL SIGNAL PROCESSING. (3) An introductory treatment of the basic concepts of signal processing via time and frequency domain (Z-transform) methods and a survey of procedures for designing, implementing, and using digital signal processors. Prereq: EE 512 or consent of instructor.

EE 635 IMAGE PROCESSING. (3) The course outlines applications of image processing and addresses basic operations involved. Topics covered include image perception, transforms, compression, enhancement, restoration, segmentation, and matching. Prereq: Graduate standing and consent of instructor. (Same as CS 635.)

EE 639 ADVANCED TOPICS IN SIGNAL PROCESSING AND COMMUNICATIONS. (3) Advanced topics in signal processing and communications research and design topics of current interests, such as optical processing, pattern recognition, satellite systems, and digital communication networks. A review and extension of current literature and selected papers and reports. May be repeated to a maximum of nine credits. Prereq: Advanced graduate standing.

EE 640 STOCHASTIC SYSTEMS. (3) Random variables, stochastic processes, stationary processes, correlation and power spectrum, mean-square estimation, filter design, decision theory, Markoff processes, simulation. Prereq: EE 421G.

EE 642 DISCRETE EVENT SYSTEMS. (3) The objective of the course is to prepare students for research in the field of supervisory control of discrete event systems (DES’s). Logical models, supervising control. Stability and optimal control of DES, complexity analysis and other related research areas will be covered. Prereq: Graduate standing or consent of instructor. (Same as CS 642.)

EE 660 ELECTRONIC DEVICE DESIGN. (3) An integrated treatment of the theory and application of electronic devices with emphasis on methods of engineering analysis and design. Prereq: EE 560 and consent of instructor.

EE 661 SOLID-STATE ELECTRONICS. (3) Bose and Fermi statistics; semiconductor theory; solid-state devices; electrical properties of insulators; theory and applications of magnetic materials, including ferrites. Prereq: EE 461G.

EE 664 SAW DEVICE DESIGN, MODELING, AND APPLICATIONS. (3) Analysis of physical principles of Surface Acoustic Wave (SAW) devices on piezoelectric substrates and their application to the design of these devices. The use of these devices in a wide range of high-frequency signal processing applications will be covered, and computer-aided design techniques for analysis and design will be surveyed. Prereq: EE 421G, 468G, and 560.

EE 672 MOLECULAR PROPERTIES IN ELECTRONIC DEVICES. (3) The study of molecular properties and the application of these properties in electronic devices. Correlation of molecular energy states with infrared and Raman spectra; selection rules and intensities of transitions; instrumentation for molecular investigation; applications. Prereq: Consent of instructor.

EE 682 SWITCHING THEORY. (3) Application of the symbolic logic of Boole and Schroeder to the design of switching systems. Topics include Boolean algebra, Boolean analysis, the solution of logic equations, the minimization of Boolean formulas, and the diagnosis of failures in digital systems. Prereq: EE 280 or consent of instructor. (Same as CS 682.)
EGR 399 COOPERATIVE ENGINEERING EDUCATION. (1)
A course designed for undergraduate students who, through the engineering cooperative education office, secure full-time, salaried, career-related positions under the supervision of a sponsoring employer. Enrollment in the course constitutes full-time status. Course may be taken on a pass–fail basis only and may be repeated on a rotational basis to a maximum of six credit hours. Prereq: Approval of Coordinator of Cooperative Engineering Education.

EGR 537 NUMERICAL ANALYSIS. (3)
Floating point arithmetic. Direct methods for the solution of systems of linear algebraic equations. Polynomial and piecewise polynomial approximation, orthogonal polynomials. Numerical integration: Newton-Cotes formulas and Gaussian quadrature. Basic methods for initial value problems for ordinary differential equations. The emphasis throughout is on the understanding and use of software packages for the solution of commonly occurring problems in science and engineering. Prereq: CS/MA 321 or equivalent, or graduate standing or consent of instructor. Knowledge of a procedural computer language is required. (Same as CS/MA 537.)

EGR 599 TOPICS IN ENGINEERING (Subtitle required). (1-3)
An experimental, interdisciplinary course devoted to a topic of interest to students in several departments of the college. May be repeated to a maximum of six credits, but only three credits may be earned under the same title. A particular topic may be offered at most twice under the EGR 599 number. Prereq: Variable, given when topic is identified.

EGR 611 BOUNDARY ELEMENT METHODS IN ENGINEERING. (3)
Introduction of boundary element methods for use in solving common engineering equations, such as the Laplace equation, the Poisson equation, the wave equation, and the diffusion equation. Both the theoretical and numerical aspects of the boundary element technique are presented. Application areas include heat conduction, potential flow problems, acoustic wave propagation, general diffusion, and stress analysis. Prereq: EGR 537 or consent of instructor. (Same as ME 611.)

*EGR 621 FINITE ELEMENT ANALYSIS IN ENGINEERING. (3)
Theoretical and computational basics of the finite element method. Development of element relationships and calculations and efficient solution of the finite element equations. Weak formulations are presented for both steady and transient 1D, 2D, 3D problems. Prereq: MA 422G and EGR 537 or consent of instructor.

*EGR 622 ADVANCED FINITE ELEMENT ANALYSIS IN ENGINEERING. (3)
Advanced topics in finite analysis including: weighted residual methods, variational principles, mixed and hybrid finite element formulations, advanced interpolation schemes and nonlinear formulations and analysis. Primary areas of emphasis are structural and solid mechanics. Prereq: EGR 621.

EGR 680 ENGINEERING APPLICATIONS OF STOCHASTIC DIFFERENTIAL EQUATIONS. (3)
Review of applied differential equations, probability and stochastic processes. Stochastic calculus. Engineering systems governed by random ordinary differential equations: solution processes for random initial conditions, random forcing terms and random parameters, examples. Engineering systems governed by partial differential equations: stochastic evolution equations; semigroup solutions; worked examples for the heat transfer equation, the groundwater flow equation and the advection-dispersion equation. Credit will not be given to students who already have credit in EE 640. Prereq: MA/STA 320 or STA 424G, MA 485 or equivalent.

EM 221 STATICS. (3)
Study of forces on bodies at rest. Vector algebra; study of force systems; equivalent force systems; distributed forces; internal forces; principles of equilibrium; application to trusses, frames and beams; friction. Prereq or concur: MA 213.

EM 230 MECHANICS FOR ELECTRICAL ENGINEERS. (3)

EM 302 MECHANICS OF DEFORMABLE SOLIDS. (3)
A study of stress and strain in deformable solids with application primarily to linear elastic materials: stress and strain transformations; simple tension and compression of axial members; torsion of shafts; bending of beams; combined loading of members; buckling of columns. Prereq: Registration in the College of Engineering or consent of chairperson, and EM 221; prereq or concur: MA 214.

EM 303 DEFORMABLE SOLIDS LABORATORY. (1)
Experimental studies of the mechanical properties of materials and structural elements. Laboratory, four hours per week for three-fourths of the semester. Prereq or concur: EM 302.

EM 313 DYNAMICS. (3)
Study of the motion of bodies. Kinematics: cartesian and polar coordinate systems; normal and tangential components; translating and rotating reference frames. Kinetics of particles and rigid bodies: laws of motion; work and energy; impulse and momentum. Prereq: Registration in College of Engineering or consent of chairperson and EM 221, MA 214, and CS 221 or CS 222 or CS 223.

EM 506 MECHANICS OF COMPOSITE MATERIALS. (3)
A study of the structural advantages of composite materials over conventional materials, considering high strength-to-weight and stiffness-to-weight ratios. Fiber reinforced, laminated and particulate materials are analyzed. Response of composite structures to static and dynamic loads, thermal and environmental effects, and failure criteria are studied. Prereq: EM 302, engineering standing or consent of instructor. (Same as MSE 506.)

EM 510 DYNAMICS AND DESIGN OF ROBOT MANIPULATORS. (3)
Analysis of the design and operation of robotic systems. Emphasis on robot kinematics, dynamics, differential motion, manipulator Jacobian, motion trajectories, geometric modeling, force and vibration analyses. Various practical applications and real cases are investigated. Prereq: ME 340 or both EE 420G and EM 230. (Same as ME 510.)

EM 513 MECHANICAL VIBRATIONS. (3)
The analysis of vibrational motion of structural and mechanical systems. Single-degree-of-freedom systems; free vibrations; nonperiodic excitation; harmonic excitation. Modal analysis of multiple-degree-of-freedom systems. Vibration of continuous bodies, including strings and bars (axial, torsional and flexural modes). Energy methods. Prereq: EM 313 and EM 302, engineering standing or consent of instructor.

EM 531 ADVANCED STRENGTH OF MATERIALS. (3)

EM 553 AIRCRAFT AND MISSILE STRUCTURAL ANALYSIS. (3)
Thin-walled structures used in aircraft, missile, and pressure vessel applications are studied. The response of thin-walled structures to flexure, torsion, pressure loads and temperature variations is analyzed by energy and approximate methods. Study of conventional and advanced composite materials, and the effects of creep and plasticity. Prereq: EM 302 or equivalent and engineering standing.

EM 556 INTRODUCTION TO COMPOSITE MATERIALS. (4)
Applications, materials selection and design of composite materials. Relation between properties of constituent materials and those of composite. Processing methods for materials and for some structures. Lab focuses on preparation and testing of composite materials and their constituents. Lecture, three hours; laboratory, three hours per week. Prereq: MA 214, CHE 236, PHY 232, MEE 201, or consent of instructor. (Same as MSE 556.)

EM 585 FOURIER SERIES AND BOUNDARY VALUE PROBLEMS. (3)
An introductory treatment of Fourier series and its application to the solution of boundary value problems in the partial differential equations of physics and engineering. Orthogonal sets of functions, Fourier series and integrals, solution of boundary value problems, theory and application of Bessel functions and Legendre polynomials. Prereq: MA 432G or equivalent. (Same as MA 485G.)

EM 601 PRINCIPLES OF CONTINUUM MECHANICS. (3)
Mathematical background including vector spaces, linear transformations, and vector analysis. Continuum balance principles of mass, momentum, angular momentum, and energy, and the entropy inequality. Modeling principles of material frame indifference and material symmetry. Constitutive equations for nonlinear thermoelectric materials with heat conduction and viscous dissipation. Linearization to classical linear elasticity and linear viscous fluids. Prereq: MA 432G or equivalent and EM 531 or ME 531 or equivalent.
EM 603 MECHANICS OF PLASTIC SOLIDS I. (3)
Permanent changes in shape of solid materials occur as plastic deformations in many engineering applications, such as extrusion, forging and rolling. This course examines the experimental basis and fundamental theoretical framework for plastic materials. The analysis of plastic deformations in simple bending, torsion, tension and compression, and some two-dimensional problems are presented. Connection between mechanics parameters, design variables and metallurgical phenomena are discussed. Limit analysis is studied. Prereq: EM 503 or EM 651 or consent of instructor.

EM 628 APPLIED MATHEMATICS IN THE NATURAL SCIENCES II. (3)
Continuation of EM/MA 527 with emphasis on special topics and techniques applied to partial differential equations that occur in various physical field theories. Field equations of continuum mechanics of solids and fluids are reviewed. The method of characteristics, elliptic functions and integrals, Legendre polynomials, Mathieu functions, integral equations and transforms, and the methods of potential theory are examples of selected topics studied in introductory applications. Intended for students in applied mathematics, science and engineering. Prereq: EM/MA 527. (Same as MA 628.)

EM 645 ADVANCED DYNAMICS I. (3)
Many physical systems in engineering involve rigid bodies in translation and rotation. Such motions are studied in this course by the use of Euler’s Laws. The kinematical description of the motions utilize the concept of reference frames. The inertia properties of rigid bodies and the energy functions for rigid bodies are covered. Analytical and numerical solutions of dynamical systems of engineering interest are considered. Prereq: EM 313; prereq, or concur: MA 432G.

EM 651 MECHANICS OF ELASTIC SOLIDS I. (3)
Many engineering applications involve the use of materials that behave elastically when performing their designed function. This course concerns the general analysis of small deformations, stress, and stress-deformation relations for elastic bodies. The solution of typical problems frequently encountered in engineering applications, e.g., extension, bending, and torsion of elastic bars, stress concentrations and thermoelastic behavior, are studied. Some modern computational methods currently used in engineering practice are introduced. Prereq: MA 432G or consent of instructor.

EM 652 MECHANICS OF ELASTIC SOLIDS II. (3)
Continuation of EM 651 with more attention to the fundamental structure of and important historical and contemporary contributions to elastic theory. Extensive use of modern computational methods that were introduced in the first course will provide familiarity with the solution of larger scale, industrially important elasticity problems. Application of the boundary integral equation method (BIE) will be emphasized. Some use also will be made of the finite element method, primarily for comparison with BIE. Instruction will include “hands-on” experience with digital computer program packages. Prereq: EM 651 or consent of instructor.

EM 653 METHODS OF APPLIED DIFFERENTIAL EQUATIONS. (3)
Integrals of nonlinear partial differential equations; similarity variables and other transformations; perturbation methods; weighted residual methods; numerical methods; selected topics. Prereq: MA 432G or consent of instructor.

EM 748 MASTER’S THESIS RESEARCH. (0)
Half-time to full-time work on thesis. May be repeated to a maximum of six semesters. Prereq: All course work toward the degree must be completed.

EM 749 DISSERTATION RESEARCH. (0)
Half-time to full-time work on dissertation. May be repeated to a maximum of six semesters. Prereq: Registration for two full-time semesters of 769 residence credit following the successful completion of the qualifying exams.

EM 760 RESEARCH PROJECT IN ENGINEERING MECHANICS. (0)
Individual study related to a special research project supervised by the student’s adviser. A final written report on the project is required. Prereq: Approval of director of graduate studies.

EM 768 RESIDENCE CREDIT FOR THE MASTER’S DEGREE. (1-6)
May be repeated to a maximum of 12 hours.

EM 769 RESIDENCE CREDIT FOR THE DOCTOR’S DEGREE. (0-12)
May be repeated indefinitely.

EM 780 SPECIAL PROBLEMS IN ENGINEERING MECHANICS. (3)
A mechanism for special and individualized study of a wide range of topics of interest to the advanced student of engineering mechanics. May be repeated to a maximum of nine credits. Prereq: Approval of director of graduate studies.

END Endodontics

END 820 ENDODONTICS I. (2)
This is a lecture-laboratory course introducing the student to the techniques of treating root canals of teeth. Emphasis is placed on the diagnosis and treatment of pulpal and periapical pathosis. Lecture, 15 hours; laboratory, 45 hours. Prereq: RSD 810, 812, and RSD 814, or consent of course director.

END 821 CLINICAL ENDODONTICS I. (1)
In this course, students will treat two clinical endodontic cases, one of which shall be a molar. Thirty hours clinic, total. Prereq: END 820.

END 830 ENDODONTICS II. (1)
This course concerns the diagnosis and treatment of endodontically related problems. Traumatic injuries, controversies in instrumentation and filling procedures, periodontic-endodontic consideration, surgical endodontics and other selected topics are discussed in depth. Lecture, 20 hours. Prereq: END 821.

END 831 CLINICAL ENDODONTICS II. (1)
In this course students will treat routine endodontic cases. Clinic, 54 hours. Prereq: END 821.

END 841 CLINICAL ENDODONTICS III. (1)
This course offers dental students further experience in providing endodontic treatment. Clinic, 40 hours. Prereq: END 831 or consent of instructor.

END 850 ENDODONTICS ELECTIVE. (1-10)
Elective courses offered by the Department of Endodontics provide opportunities for further study of or experience in various aspects of endodontics. Topics may include diagnosis, case selection, treatment planning, emergency treatment, intracanal medications, obturation materials, periapical surgery, root amputations, and endodontic-periodontic relationships. Hours variable, ranging from a minimum of 16 hours lecture/discussion to a maximum of 10 weeks clinical experience. May be repeated up to a maximum of ten credits. Prereq: The minimum year in dental school and any course prerequisites will be announced for each topic.

ENG English

ENG 098 ENGLISH FOR SPEAKERS OF OTHER LANGUAGES. (3)
This course is a writing course designed to provide international undergraduate students with a firm basis in the rhetorical patterns of written English and in the grammatical structures and expressions associated with those patterns. It also serves as an introduction to the analysis and organization of information as found in English paragraphs and essays. Emphasis is placed upon writing beyond the sentence level. Students must attain at least a C in order to enter ENG 099. The course may be repeated up to six credits. Students cannot count this credit toward the Freshman Composition requirement or toward the graduation requirement. Lecture, five hours per week.

ENG 101 WRITING I. (3)
A course in writing, designed to teach students to generate and develop ideas—through significant revision—in clear, effective written English. Course includes a review of grammar, usage, punctuation, and mechanics. Note: Credit not available by special examination, Advanced Placement excepted.

ENG 102 WRITING II. (3)
Study and practice in writing in response to written texts. Writing assignments include summary, synthesis, critique, argumentation. Instruction in library research methods and in the conventions of academic writing. Note: Credit not available by special examination, Advanced Placement excepted. Prereq: ENG 101 or equivalent.

ENG 105 WRITING: AN ACCELERATED COURSE. (3)
An intensive course in writing that combines the content of ENG 101 and ENG 102, emphasizing argumentation and library research. ENG 105 satisfies the University Writing Requirement for students who qualify for admission by ACT score and special examination. Note: Credit for this course and for fulfillment of the University Writing Requirement possible by CLEP examination.
ENG 161 INTRODUCTION TO LITERATURE. (3)
An analytical rather than historical approach to literature, intended to deepen the student's insight into the nature and purpose of literature and to develop literary taste and judgment. Designed especially for nonmajors, this course satisfies no requirements of the English major. (Offered in Community College System only.)

ENG 203 BUSINESS WRITING. (3)
Instruction and experience in writing for business, industry, and government. Emphasis on clarity, conciseness, and effectiveness in preparing letters, memos, and reports for specific audiences. Prereq: Completion of University Writing requirement.

ENG 204 TECHNICAL WRITING. (3)
Instruction and experience in writing for science and technology. Emphasis on clarity, conciseness, and effectiveness in preparing letters, memos, and reports for specific audiences. Prereq: Completion of University Writing requirement.

*ENG 205 INTERMEDIATE WRITING. (3)
Instruction and experience in nonfictional writing. The emphasis is on clarity, conciseness, and effective form in abstracts, in case studies, and in literature reviews for special audiences. Assignments include research and oral presentations. Note: ENG 205 fulfills no requirements of the English major. Prereq: Completion of the University Writing requirement.

ENG 207 BEGINNING WORKSHOP IN IMAGINATIVE WRITING (Subtitle required). (3)
A beginning course in the craft of writing, teaching students how to read critically and how to revise work in progress. The students provide an audience for each other's work. Exercises involve practice in aspects of craft and promote experimentation with different forms, subjects, and approaches; outside reading provides models and inspiration. May be repeated under different subtitles to a maximum of six credits. Prereq: Consent of instructor.

ENG 211 INTRODUCTION TO LINGUISTICS. (3)
Introduction to the scientific study of human language. Emphasis on the fundamental principles of linguistic theory; applications of these principles in the investigation of grammatical structure, language change, regional and social dialect variation, and the acquisition of language by children. Credit will not be given to students who already have credit for either ANT 215 or ENG 414G. Prereq: Two college semesters or two high school years of a foreign language. (Same as LIN 211.)

ENG 221 SURVEY OF ENGLISH LITERATURE I. (3)
A survey of English literature from Beowulf through Milton. The emphasis is upon the more important writers, with attention to their cultural backgrounds.

ENG 222 SURVEY OF ENGLISH LITERATURE II. (3)
A survey of English literature from Dryden to the present. The emphasis is upon the more important writers, with attention to their cultural backgrounds.

ENG 251 SURVEY OF AMERICAN LITERATURE I. (3)
A survey of American literature from the Colonial Era to the Civil War. Emphasis upon the more important writers, with attention to their cultural backgrounds.

ENG 252 SURVEY OF AMERICAN LITERATURE II. (3)
A survey of American literature from the Civil War to the present. Emphasis upon the more important writers with attention to their cultural backgrounds.

ENG 261 SURVEY OF WESTERN LITERATURE FROM THE GREEKS THROUGH THE RENAISSANCE. (3)
A study of works by major Western authors from the Bible and ancient Greek literature through the Renaissance. Note: ENG 261 fulfills no requirements of the English major.

ENG 262 SURVEY OF WESTERN LITERATURE FROM 1660 TO THE PRESENT. (3)
A study of works by major Western authors from mid-17th century to the present. Note: ENG 262 fulfills no requirements of the English major.

ENG 264 MAJOR BLACK WRITERS. (3)
A cross-cultural and historical approach to written and oral works by major Black authors of Africa, the Caribbean and the United States. The course includes writers such as Chinua Achebe (Africa), Wilson Harris (Caribbean), and Toni Morrison (USA).

ENG 270 THE OLD TESTAMENT AS LITERATURE. (3)
A survey of the major types of Old Testament literature in English translation. While attention will be paid to historical backgrounds, the emphasis is on careful analysis of literary forms and techniques.

ENG 271 THE NEW TESTAMENT AS LITERATURE. (3)
A survey of the major types of New Testament literature in English translation. While attention will be paid to historical backgrounds, the emphasis is on careful analysis of literary forms and techniques.

ENG 281 INTRODUCTION TO FILM. (3)
An introduction to the study of films as a narrative art and a cultural document. Viewing of films outside of class is required. May not be taken concurrently with ENG 380.

ENG 305 ADVANCED WRITING. (3)
An intermediate-level course in the forms of nonfictional writing. Emphasis on the growth of a graceful, professional writing style. To enter course, students must demonstrate basic writing proficiency, an absence of problems requiring remedial instruction in writing. Prereq: Completion of first-year English requirement and consent of instructor.

ENG 320 INTRODUCTION TO LITERARY STUDY. (3)
A practical introduction to the theory and practice of literary study. Emphases on literary terms, genre distinctions, practice in writing about literature. Readings in prose fiction, poetry, and drama. Required for English majors.

ENG 356 STUDIES IN BLACK AMERICAN LITERATURE. (3)
An analytical-historical approach to the development of black American literature from Douglass and DuBois to Ellison, Baldwin, and Cleaver.

ENG 360 THE SHORT STORY. (3)
Intensive study of the short story as a literary form. Readings will be drawn from a wide variety of stories and may include works by American, British, and, in translation, continental authors.

ENG 361 LITERARY TYPES (Subtitle required). (3)
Studies in one or more of the following literary types: comedy, tragedy, satire, romance. Specific topics announced the preceding semester. May be repeated to a maximum of six credits with consent of English Department Director of Advising. May not be repeated under the same subtitle.

ENG 363 SPECIAL TOPICS IN LITERATURE (Subtitle required). (3)
Study of special topics in literature, in areas such as fiction, poetry, drama, and the relation of literature and intellectual movements. Topics announced the preceding semester. May be repeated under different subtitles for a maximum of six credits.

ENG 364 STUDIES IN CONTEMPORARY LITERATURE (Subtitle required). (3)
Selected topics in the fiction and poetry of the English-speaking world since World War II. Topics announced the preceding semester. May be repeated under different subtitles for a maximum of six credits.

ENG 369 STUDIES IN SOUTHERN AMERICAN LITERATURE. (3)
Studies in southern American literature with special attention to such major figures as the Southern Regionalists: Faulkner, Wolfe, Warren, O'Connor, Welty, and Dickey.

ENG 374 AMERICAN FOLKLORE. (3)
An introductory survey of folklore using American materials. The use of this material in other forms. Experience in actual collecting and in the cataloging of materials.

ENG 375 THE WOMAN WRITER. (3)
Survey of the themes and forms of female literary expression. Includes works by writers from a range of ethnic backgrounds and supplements the literature with biographical and social context.

ENG 378 TOPICS IN POPULAR CULTURE (Subtitle required). (3)
Variable in content and context, this course may focus on any of several aspects of popular culture—genre, theory, history, contemporary and past expressions in popular narrative forms. Specific content announced the preceding semester. May be repeated up to six hours with permission of English Department Director of Advising. May not be repeated under the same subtitle.

ENG 380 FILM CRITICISM. (3)
A course in film criticism as the art of seeing movies; attention is given to the process of descriptive analysis and evaluation. Viewing of the films outside of class is required. May not be taken concurrently with ENG 281.

ENG 381 HISTORY OF FILM I. (3)
The history of film as art and industry from the invention of the moving picture to World War II. Emphasis on the artistic development of the silent film in America and Europe, the rise of the American studio system, and the emergence of the sound film in the 1930's. Viewing of films outside of class is required.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 425G</td>
<td>SHAKESPEARE SURVEY</td>
<td>(3)</td>
<td>Selected nondramatic works of such writers as Bacon, Donne, Ben Jonson, George Herbert, and Marlowe. Literature of the English Renaissance exclusive of the drama. Foreign sources of the English Canterbury Tales.</td>
</tr>
<tr>
<td>ENGL 426G</td>
<td>SHAKESPEARE STUDIES (Subtitle required)</td>
<td>(3)</td>
<td>Detailed study of a special topic in Shakespeare, such as Shakespeare’s tragedies, early Shakespeare, Shakespeare’s romantic comedies, Shakespeare and film. Topics announced the previous semester. May be repeated under different subtitles to a maximum of six credits.</td>
</tr>
<tr>
<td>ENGL 428G</td>
<td>MILTON</td>
<td>(3)</td>
<td>Extensive readings in Milton’s poetry and prose.</td>
</tr>
<tr>
<td>ENGL 430G</td>
<td>THE RESTORATION AND EARLY 18th CENTURY: 1660-1730</td>
<td>(3)</td>
<td>A survey of the rise of Classicism with emphasis on the works of Dryden, Pope, Swift, Addison, and Steele.</td>
</tr>
<tr>
<td>ENGL 431G</td>
<td>The Later 18th Century: 1730-1780</td>
<td>(3)</td>
<td>A survey of the transition from Classicism to Romanticism with emphasis on the works of Boswell, Johnson, Gray, Goldsmith, and Cowper.</td>
</tr>
<tr>
<td>ENGL 435G</td>
<td>THE ROMANTIC MOVEMENT: 1780-1815</td>
<td>(3)</td>
<td>A survey of the poetry and prose of the first half of the romantic movement. The emphasis is on the poetry of Keats, Shelley, and Byron.</td>
</tr>
<tr>
<td>ENGL 436G</td>
<td>THE ROMANTIC MOVEMENT: 1815-1830</td>
<td>(3)</td>
<td>A survey of the poetry and prose of the second half of the romantic movement. The emphasis is on the poetry of Wordsworth, Coleridge, and Byron.</td>
</tr>
<tr>
<td>ENGL 439G</td>
<td>VICTORIAN PERIOD: 1830-1860</td>
<td>(3)</td>
<td>A study of the major essays and poems of the early Victorian period. Such authors as Mill, Carlyle, Browning, Tennyson, Arnold, and Newman will be considered both analytically and historically.</td>
</tr>
<tr>
<td>ENGL 440G</td>
<td>VICTORIAN PERIOD: 1860-1900</td>
<td>(3)</td>
<td>Survey of the major figures and movements of the late Victorian period. Includes an investigation of the principal changes which have affected English poetry and prose works of others. Emphasis on developing critical intelligence and a sense of audience. Techniques of revision, verification of sources, preparation of manuscripts. Not for students with writing deficiencies. Prereq: ENG 305 or consent of instructor.</td>
</tr>
<tr>
<td>ENGL 442G</td>
<td>THE ROMANTIC MOVEMENT: 1860-1900</td>
<td>(3)</td>
<td>A study of the English novel and its backgrounds from Scott and the early Victorians through Hardy and the Age of Transition. Such novelists as the Brontes, Dickens, Thackeray, Trollope, George Eliot, Meredith, and Collins will be studied.</td>
</tr>
<tr>
<td>ENGL 444G</td>
<td>VICTORIAN PERIOD: 1830-1860</td>
<td>(3)</td>
<td>A study of the poetry and prose of the second half of the romantic movement. The emphasis is on the poetry of Keats, Shelley, and Byron.</td>
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<tr>
<td>ENGL 445G</td>
<td>VICTORIAN PERIOD: 1860-1900</td>
<td>(3)</td>
<td>Survey of the major figures and movements of the late Victorian period. Includes an investigation of the principal changes which have affected English poetry and prose works of others. Emphasis on developing critical intelligence and a sense of audience. Techniques of revision, verification of sources, preparation of manuscripts. Not for students with writing deficiencies. Prereq: ENG 305 or consent of instructor.</td>
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<td>ENGL 446G</td>
<td>VICTORIAN PERIOD: 1860-1900</td>
<td>(3)</td>
<td>Survey of the major figures and movements of the late Victorian period. Includes an investigation of the principal changes which have affected English poetry and prose works of others. Emphasis on developing critical intelligence and a sense of audience. Techniques of revision, verification of sources, preparation of manuscripts. Not for students with writing deficiencies. Prereq: ENG 305 or consent of instructor.</td>
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<td>ENGL 448G</td>
<td>VICTORIAN PERIOD: 1860-1900</td>
<td>(3)</td>
<td>Survey of the major figures and movements of the late Victorian period. Includes an investigation of the principal changes which have affected English poetry and prose works of others. Emphasis on developing critical intelligence and a sense of audience. Techniques of revision, verification of sources, preparation of manuscripts. Not for students with writing deficiencies. Prereq: ENG 305 or consent of instructor.</td>
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<td>ENGL 449G</td>
<td>VICTORIAN PERIOD: 1860-1900</td>
<td>(3)</td>
<td>Survey of the major figures and movements of the late Victorian period. Includes an investigation of the principal changes which have affected English poetry and prose works of others. Emphasis on developing critical intelligence and a sense of audience. Techniques of revision, verification of sources, preparation of manuscripts. Not for students with writing deficiencies. Prereq: ENG 305 or consent of instructor.</td>
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<td>ENGL 450G</td>
<td>VICTORIAN PERIOD: 1860-1900</td>
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<td>Survey of the major figures and movements of the late Victorian period. Includes an investigation of the principal changes which have affected English poetry and prose works of others. Emphasis on developing critical intelligence and a sense of audience. Techniques of revision, verification of sources, preparation of manuscripts. Not for students with writing deficiencies. Prereq: ENG 305 or consent of instructor.</td>
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<tr>
<td>ENGL 451G</td>
<td>VICTORIAN PERIOD: 1860-1900</td>
<td>(3)</td>
<td>Survey of the major figures and movements of the late Victorian period. Includes an investigation of the principal changes which have affected English poetry and prose works of others. Emphasis on developing critical intelligence and a sense of audience. Techniques of revision, verification of sources, preparation of manuscripts. Not for students with writing deficiencies. Prereq: ENG 305 or consent of instructor.</td>
</tr>
<tr>
<td>ENGL 452G</td>
<td>VICTORIAN PERIOD: 1860-1900</td>
<td>(3)</td>
<td>Survey of the major figures and movements of the late Victorian period. Includes an investigation of the principal changes which have affected English poetry and prose works of others. Emphasis on developing critical intelligence and a sense of audience. Techniques of revision, verification of sources, preparation of manuscripts. Not for students with writing deficiencies. Prereq: ENG 305 or consent of instructor.</td>
</tr>
<tr>
<td>ENGL 453G</td>
<td>VICTORIAN PERIOD: 1860-1900</td>
<td>(3)</td>
<td>Survey of the major figures and movements of the late Victorian period. Includes an investigation of the principal changes which have affected English poetry and prose works of others. Emphasis on developing critical intelligence and a sense of audience. Techniques of revision, verification of sources, preparation of manuscripts. Not for students with writing deficiencies. Prereq: ENG 305 or consent of instructor.</td>
</tr>
</tbody>
</table>

**Key:** # = new course  * = course changed  † = course dropped
ENG 454G AMERICAN NOVEL BEFORE 1900. (3)
An analytical and historical survey of the American novel from Charles Brockden Brown to the early Dreiser. Novelists such as Cooper, Hawthorne, Melville, Twain, Howells, James, and Crane will be studied.

ENG 455G MODERN AMERICAN NOVEL. (3)
An analytical and historical survey of the American novel from Wharton to Mailer. Novelists such as Dreiser, Anderson, Lewis, Fitzgerald, Hemingway, Faulkner, Steinbeck, Updike, and Bellow will be studied.

ENG 466G MODERN DRAMA. (3)
Continental, British, and American dramatic literature from Ibsen to the present. Authors such as the following are studied: Shaw, O’Neill, Brecht, and Beckett.

ENG 472G SPECIAL TOPICS IN FOLKLORE
(Subtitle required). (3)
Using various approaches – theoreticographic, comparative approaches, fieldwork, textual analysis, and contextual analysis – the course examines special topics in folklore not covered in survey or genre courses. Specific content announced the preceding semester. May be repeated up to six hours with permission of English Department Advisory. May not be repeated under the same subtitle.

ENG 473G SURVEY OF WORLD FOLKLORE. (3)
A survey on a worldwide scope of types of folklore. Emphasis upon folklore as a cultural phenomenon in its own right and upon its relations to literary types. The development of the science of folklore.

ENG 478G APPALACHIAN FOLKLORE. (3)
The course, by discussions and lectures, provides definitions of the various genres of folklore comprising the traditional humanistic threads of the Appalachian sociocultural fabric, with emphasis upon the place of folklore in Appalachians’ lives.

ENG 480G SPECIAL STUDIES IN FILM
(Subtitle required). (3)
Study of special topics in film, such as directors, genres, film and literature, film theories, and film movements. Viewing of films outside of class is required. Topics announced the preceding semester may be repeated up to a maximum of six credits with consent of instructor. Prereq: ENG 281 or 380 or consent of instructor.

ENG 499G TOPICS OF GENDER IN LITERARY STUDIES
(Subtitle required). (3)
Variable in content and context, this course focuses on one of several aspects of gender in literary studies, such as gender and genre, gender issues in a particular literary period, black women writers, feminist literary theory. May be repeated under different subtitles to a maximum of six hours.

ENG 507 ADVANCED WORKSHOP IN IMAGINATIVE WRITING
(Subtitle required). (3)
For the student who has shown marked talent and commitment, this course provides a more rigorous workshop among peers and includes additional attention to outside reading. Each student will produce a chapbook of poems or stories. May be repeated with the same subtitle to a maximum of six credits. Prereq: ENG 207 and ENG 407, or the equivalent, and consent of the instructor.

ENG 509 COMPOSITION FOR TEACHERS. (3)
The basic studies helpful to teachers of composition. The teaching of grammar, punctuation, usage, etc., and the planning, correction, and revision. Students are required to do quite a bit of writing.

ENG 510 AMERICAN ENGLISH. (3)
The varieties of modern American English: regional and social dialects, ethnic varieties, creoles, and argots. History and methods of American dialect study. Prereq: ENG/LIN 211 or ENG 414G or ANT 215 or the equivalent; or consent of instructor.

ENG 512 MODERN ENGLISH GRAMMAR. (3)
Contemporary approaches to grammatical analysis; the interrelationships of phonology, morphology, and syntax. Prereq: ENG/LIN 211 or ENG 414G or ANT 215 or the equivalent; or consent of instructor.

ENG 513 TEACHING ENGLISH AS A SECOND LANGUAGE. (3)
The course will examine the current theories and methods of teaching English as a second language. The course will include (1) language learning theory as it relates to other disciplines; (2) methods and techniques of contrastive analysis. Prereq: One course in linguistics or consent of instructor. (Same as EDC 513.)

ENG 514 TESL MATERIALS AND METHODS. (3)
An extension of ENG/EDC 513, this course will include examination and evaluation of published materials designed for teaching English to speakers of other languages. Students will create individualized teaching materials and gain practical experience in applying the methods and using their own materials. Prereq: ENG/EDC 513 or consent of instructor. (Same as EDC 514.)

ENG 515 PHONOLOGICAL ANALYSIS. (3)
An investigation of speech-sounds and systems of speech-sounds. Articulatory phonetics, analysis of phonological systems, phonological theories. Includes fieldwork on the phonology of a non-Indo-European language; within a given academic year, the same language serves as the basis for fieldwork in ANT/ENG/LIN 515 and ANT/ENG/LIN 516. Prereq: ENG/LIN 211 or equivalent. (Same as ANT/LIN 515.)

ENG 516 GRAMMATICAL ANALYSIS. (3)
Emphasis on the systematic interrelationships of morphemes within words and sentences. Practical training in the writing of grammars and exposure to various theories of grammatical description. Includes fieldwork on the morphology and syntax of a non-Indo-European language; within a given academic year, the same language serves as the basis for fieldwork in ANT/ENG/LIN 515 and ANT/ENG/LIN 516. Prereq: ENG/LIN 211 or equivalent. (Same as ANT/LIN 516.)

ENG 519 INTRODUCTION TO OLD ENGLISH. (3)
An introduction to Old English language and literature.

ENG 562 COMPARATIVE LITERATURE: 17TH THROUGH 19TH CENTURY. (3)
A study in English of major works of continental European literature written in modern languages, especially French, German, Spanish, Italian, Russian, from mid-17th century to end of 19th century. (Same as CLT 562.)

ENG 563 COMPARATIVE LITERATURE: 20TH CENTURY. (3)
Masterpieces and examples of 20th-century Western World literature, in English translation, with emphasis on the emergence of new forms and techniques invented to express the complexity of modern life. The course will study novels, poems, and plays in their traditional development and in experimental and divergent forms. (Same as CLT 563.)

ENG 569 HISTORY OF LITERARY CRITICISM II. (3)
The theory and practice of modern literary criticism such as New Criticism, Formalism, structuralism, reader response, Marxism, deconstruction, psychoanalysis, and feminist criticism.

ENG 570 SELECTED TOPICS FOR ADVANCED STUDIES IN LITERATURE
(Subtitle required). (3)
Study of special topics that cut across the normal divisions of genre or periods, such as the relations of literature to other disciplines; metaphor and symbolism; interpretive theory. May be repeated to a maximum of six credits. Prereq: Junior standing or consent of instructor.

ENG 572 STUDIES IN ENGLISH FOR TEACHERS
(Subtitle required). (3)
Specialized studies designed to increase the teacher’s knowledge of subject matter and to enlarge his understanding of new developments and approaches to the teaching of English. May be repeated to a maximum of six credits.

ENG 581 AESTHETICS OF FILM. (3)
An examination of theories of film. Emphasis on the establishment of criteria for the aesthetic response to film and the visual image. Viewing of films outside of class is required. Prereq: Another ENG film course or consent of instructor.

PROSEMNIARS: The purpose of the proseminar courses (600 level) is to impart through lectures and discussion both the facts of literary history and the techniques of literary analysis. They are, therefore, designed to go beyond the mere information level to techniques of contemporary literary criticism and scholarship.

ENG 600 BIBLIOGRAPHY AND METHODS OF RESEARCH. (3)
An introduction to descriptive and enumerative bibliography, textual criticism, and historical scholarship.

ENG 607 GRADUATE WRITING WORKSHOP
(Subtitle required). (3)
A course for experienced writers who have some knowledge of contemporary American literature. Emphasis on students’ original work and outside reading. Each student will produce a chapbook of poems or stories and write a short introduction to it. May be repeated with the same subtitle to a maximum of six credits. Prereq: Consent of instructor.
**ENG 609 COMPOSITION FOR TEACHERS.** (3)
A course in the theory and practice of teaching English composition at the college level. Required of first-year teaching assistants in the Department of English, the course is structured to match the ordering of English 101 so that the practical work of college writing and the theoretical considerations of English 609 will be mutually reinforcing.

**ENG 610 STUDIES IN RHETORIC.** (3)
This course introduces theories of rhetoric with readings drawn from major theoreticians and rhetoricians; applies theory to the practice of teaching college writing, with special emphasis on argumentation, the subject of English 102; and provides an opportunity for teaching assistants to get help from the teacher and from their peers in responding to and evaluating students’ written work. This course, required of second semester teaching assistants in the Department of English, continues the work of English 609. Prereq: ENG 609 or equivalent.

**ENG 617 STUDIES IN LINGUISTICS**

(Subtitle required) (3)
A comprehensive investigation of some designated topic in general or applied linguistics. May be repeated to a maximum of nine credits under different subtitles. Prereq: An introductory course in linguistics (ANT 215, ENG/LIN 211, or ENG 414G) or permission of instructor. (Same as LIN 617).

**ENG 618 HISTORY OF THE ENGLISH LANGUAGE.** (3)
An intensive study of the change of English from a synthetic to an analytic language, from its origin in Indo-European to its current stage of development. Emphasis is on changes in phonology, morphology, syntax, and semantics, from Old to Early Modern English.

**ENG 619 BEOWULF.** (3)
Translation and study of Beowulf. ENG 518 or ENG 519 recommended as background courses.

**ENG 620 STUDIES IN MIDDLE ENGLISH LITERATURE.** (3)
A study in depth of selected writers and movements.

**ENG 621 STUDIES IN CHAUCER.** (3)
A study in depth of selected works of Chaucer, especially Troilus, in relation to aspects of the medieval literary tradition.

**ENG 622 STUDIES IN ENGLISH LITERATURE: 1500-1600.** (3)
Comprehensive study of broad topics, normally limited to an intensive survey of the literature and scholarship of the period as a whole.

**ENG 623 STUDIES IN ENGLISH LITERATURE: 1600-1660.** (3)
Comprehensive study of broad topics, normally limited to an intensive survey of the literature and scholarship of the period as a whole.

**ENG 625 STUDIES IN RENAISSANCE DRAMA EXCLUSIVE OF SHAKESPEARE.** (3)
A study in depth of selected writers.

**ENG 626 STUDIES IN SHAKESPEARE.** (3)
A reading of Shakespeare’s work and an intensive study of a selection representative of the full range of his dramatic and nondramatic writing. Extensive reading in Shakespeare scholarship and criticism. Prereq: One of the following—ENG 425G, 426G, 427G, or equivalent.

**ENG 628 STUDIES IN MILTON.** (3)
A study of all of Milton’s poetry and of his more important prose; readings from contemporary thinkers; studies in thought currents of the time and Milton’s relation to them.

**ENG 630 STUDIES IN ENGLISH LITERATURE: 1660-1720.** (3)
Comprehensive study of broad topics, normally limited to an intensive survey of the literature and scholarship of the period as a whole.

**ENG 631 STUDIES IN ENGLISH LITERATURE: 1720-1780.** (3)
Comprehensive study of broad topics, normally limited to an intensive survey of the literature and scholarship of the period as a whole.

**ENG 635 STUDIES IN LITERATURE: 1780-1815.** (3)
A study in depth of selected writers and movements.

**ENG 636 STUDIES IN LITERATURE: 1815-1830.** (3)
A study in depth of selected writers and movements.

**ENG 638 STUDIES IN ENGLISH LITERATURE: 1830-1860.** (3)
Comprehensive study of broad topics, normally limited to an intensive survey of the literature and scholarship of the period as a whole.

**ENG 639 STUDIES IN ENGLISH LITERATURE: 1860-1900.** (3)
Comprehensive study of broad topics, normally limited to an intensive survey of the literature and scholarship of the period as a whole.

**ENG 640 STUDIES IN THE 19th CENTURY BRITISH NOVEL.** (3)
A study in depth of selected writers. Prereq: Graduate standing.

**ENG 642 STUDIES IN MODERN BRITISH LITERATURE.** (3)
Selected writers, works, and movements in the modern period with concentration on the period from 1890 to 1945.

**ENG 643 STUDIES IN MODERN BRITISH AND AMERICAN POETRY.** (3)
Selected poets from England and America, with a major concentration on the period 1890-1945.

**ENG 651 STUDIES IN AMERICAN LITERATURE BEFORE 1860.** (3)
A study in depth of selected writers and movements.

**ENG 652 STUDIES IN AMERICAN LITERATURE: 1860-1900.** (3)
A study in depth of selected writers and movements.

**ENG 653 STUDIES IN AMERICAN LITERATURE SINCE 1900.** (3)
A study in depth of selected writers and movements.

**ENG 656 BLACK AMERICAN LITERATURE.** (3)
An in-depth study of black American literature, with concentration on major texts by major black writers.

**ENG 660 MODERN CRITICAL THEORY.** (3)
Detailed examination of one or another topic in contemporary theory of interpretation, such as literature and analytical philosophy, phenomenology and literature, structuralism, Marxism, psychoanalysis.

**ENG 673 STUDIES IN FOLKLORE.** (3)
A study in depth of selected topics such as the development of literary genres out of oral folklore. Prereq: Eng 374 or consent of instructor.

**ENG 681 STUDIES IN FILM.** (3)
Comprehensive study of the history, theory, and criticism of film, with concentration on a series of major American and foreign films. Viewing of films outside of class is required.

**ENG 682 STUDIES IN FICTION.** (3)
A study in depth of selected types of fiction.

**ENG 683 STUDIES IN DRAMA.** (3)
A study in depth of selected types of drama.

**ENG 684 STUDIES IN POETRY.** (3)
A study in depth of selected types of poetry. May be repeated to a maximum of six credits.

**ENG 690 STUDIES IN LITERATURE AND GENDER (Subtitle required).** (3)
This course focuses on gender as a primary category for literary analysis. Topics will vary, from a group of authors, an historical period or an aesthetic movement, to a genre, a theme, or an aspect of literary theory. May be repeated under different subtitles to a maximum of six credits.

**ENG 720 SEMINAR IN MEDIEVAL LITERATURE.** (3)
Recent topics: medieval fiction; Chaucer and the Gothic mind. May be repeated to a maximum of six credits.

**ENG 722 SEMINAR IN 16th CENTURY LITERATURE.** (3)
Recent topics: Spenser; Elizabethan drama. May be repeated to a maximum of six credits.

**ENG 723 SEMINAR IN 17th CENTURY LITERATURE.** (3)
Recent topics: Donne; Herbert; Milton. May be repeated to a maximum of six credits.

**ENG 726 SEMINAR IN SHAKESPEARE.** (3)
Seminar in Shakespeare. May be repeated to a maximum of six credits.

**ENG 730 SEMINAR IN 18th CENTURY LITERATURE.** (3)
Recent topics: neoclassic satire. May be repeated to a maximum of six credits.

**ENG 735 SEMINAR IN ROMANTIC LITERATURE.** (3)
Recent topics: Keats; Wordsworth. May be repeated to a maximum of six credits.

**ENG 738 SEMINAR IN VICTORIAN LITERATURE.** (3)
Seminar in Victorian literature. May be repeated to a maximum of six credits.
ENTS 360 GENETICS.

*ENTS 360 GENETICS.
The basic principles of heredity as currently understood from evidence accumulated in classical, cytogenetic, molecular, and quantitative genetic experiments. Emphasis is placed on a thorough understanding of genetic principles and the relationship of genetics to all biological disciplines. Prereq: Six credits in biological sciences and one course in general chemistry. (Same as AGR/ASC 360.)

ENTS 395 INDEPENDENT WORK.

ENTS 399 FIELD BASED/COMMUNITY BASED EDUCATION.

ENTS 461 INTRODUCTION TO POPULATION GENETICS.

ENTS 500 INTEGRATED PEST MANAGEMENT.

ENTS 561 MEDICAL ENTOMOLOGY.

ENTS 562 EXTERNAL MORPHOLOGY OF INSECTS.

ENTS 563 PARASITOLOGY.

ENTS 608 BEHAVIORAL ECOLOGY.

ENTS 740 LIVESTOCK ENTOMOLOGY.

ENTS 748 MASTER’S THESIS RESEARCH.

ENTS 749 DISSERTATION RESEARCH.

ENTS 750 SEMINAR IN COLONIAL LITERATURE.

ENTS 751 SEMINAR IN AMERICAN LITERATURE: 1800-1860.

ENTS 752 SEMINAR IN AMERICAN LITERATURE: 1860-1900.

ENTS 753 SEMINAR IN AMERICAN LITERATURE SINCE 1900.

ENTS 758 RESIDENCE CREDIT FOR THE DOCTOR’S DEGREE.

ENTS 771 SEMINAR IN SPECIAL TOPICS.

ENTS 780 DIRECTED STUDIES.

ENTS 781 SEMINAR IN FILM (Subtitle required).

ENTS 800 INTEGRATED PEST MANAGEMENT.

ENTS 900 INDEPENDENT WORK.

ENTS 950 INTEGRATED PEST MANAGEMENT.

ENTS 961 INSECT TAXONOMY.

ENTS 968 BEHAVIORAL ECOLOGY.

ENTS 971 SEMINAR IN SPECIAL TOPICS.

ENTS 978 LIVESTOCK ENTOMOLOGY.

ENTS 980 INTEGRATED PEST MANAGEMENT.

ENTS 990 INDEPENDENT WORK.

ENTS 995 INDEPENDENT WORK.
ENT 608 COMMUNITY AND ECOSYSTEM ECOLOGY. (3)
This course discusses the structural attributes of communities, particularly as determined by antagonistic and mutualistic interactions among populations. The diversity and stability of communities and response of species to environmental gradients are emphasized. The ecosystem concept is introduced and system ecology is considered. Prereq: BIO 451G or FOR 340 or consent of instructor. (Same as BIO/FOR 609.)

ENT 610 POPULATION ECOLOGY. (3)
This course examines the processes that determine the sizes and distributions of plant and animal populations. Topics addressed include: life tables, life history strategies, population regulation and population stability, and the role of biological factors such as competition, predation and mutualism in determining single-species and multi-species population dynamics. Prereq: BIO 451G or FOR 340 and one semester of calculus; or consent of instructor. (Same as BIO/FOR 610.)

ENT 625 INSECT-PLANT RELATIONSHIPS. (3)
This course examines the natural history, ecology, and evolution of insect/plant relationships. Topics include mechanisms and theory of plant defense, behavioral and physiological adaptations of herbivorous insects, pollination biology, multitrophic-level interactions, causes of insect outbreaks, and applications to managed ecosystems. Critical reading and discussion of current literature is emphasized. Prereq: Two years of college-level biology. (Same as BIO 625.)

ENT 626 INSECT PATHOLOGY. (3)
Principles of insect pathology related to the etiology, pathogenesis, sympotopathology, gross pathology, histopathology, and epizootiology of insect diseases with emphasis on infectious diseases caused by occluded viruses, bacteria, fungi, and protozoans. Lecture, two hours; laboratory, two hours. Prereq: Consent of instructor.

ENT 635 INSECT PHYSIOLOGY AND INTERNAL MORPHOLOGY. (4)
Principles of insect physiology, function of organs, circulation, reproduction, respiration, neurophysiology, endocrinology and digestion. Internal morphology will be studied as it relates to function. Lecture, three hours; laboratory, two hours. Prereq: Consent of instructor. (Same as BIO 635.)

ENT 660 IMMATURE INSECTS. (3)
Bionomics, structure and classification of immature stages of insects; practice in their identification. Lecture, one hour; laboratory, six hours. Prereq: BIO 570 or ENT 564, or consent of instructor.

ENT 665 INSECT ECOLOGY. (3)
The biotic and physical factors influencing the distribution and abundance of insects and insect populations. Prereq: Consent of instructor. (Same as BIO 665.)

ENT 670 EXPERIMENTAL METHODS IN ENTOMOLOGY – FIELD. (2)
The principles and techniques of field entomological research with emphasis on problem selection and the collection, evaluation, and presentation of data. Lecture, two hours; laboratory, four hours. Taught first half of the semester.

ENT 671 EXPERIMENTAL METHODS IN ENTOMOLOGY – LABORATORY. (2)
The principles and techniques of instrumentation in laboratory entomological research with evaluation and presentation of data. Two class hours; four laboratory hours. Taught second half of the semester.

ENT 680 BIOLOGICAL CONTROL. (3)
Principles related to the use of arthropods to suppress populations of arthropod pests and weeds. Includes historical perspective, ecological relationships, and contemporary issues related to the conservation and manipulation of arthropod predators, parasitoids, and herbivores. Prereq: ENT 300 or equivalent.

ENT 695 SPECIAL TOPICS IN ENTOMOLOGY (Subtitle required). (3)
Special topical or experimental courses in entomology for advanced graduate students. Special title required and must be approved by the chairperson of the Department of Entomology. A particular title may be offered twice at most under ENT 695. May be repeated to a maximum of six credits. Students may not repeat under the same subtitle. Prereq: Will be set by instructor.

ENT 748 MASTER'S THESIS RESEARCH. (0)
Half-time to full-time work on thesis. May be repeated to a maximum of six semesters. Prereq: All course work toward the degree must be completed.
EPE 601 PROSEMINAR. (1)
Introductory survey of the bibliographic parameters and research approaches to educational policy studies and evaluation. Graduate faculty resources and typical research problems are introduced. Emphasis upon significance and importance of research writing and dissertation in graduate studies. Required, first semester of study, for all degree students in the department. Prereq: Graduate standing or consent of instructor.

EPE 602 SOCIAL POLICY ISSUES AND EDUCATION. (3)
Study of philosophical, historical, and sociological dimensions of contemporary educational policy issues. Topical policy controversies, such as equality of educational opportunity, tuition tax credits, and religious education, will be examined.

EPE 603 EDUCATIONAL POLICY ANALYSIS: AN INTRODUCTION. (3)
Examination of the basic aspects of educational policy analysis. Emphasis upon major issues endemic to the pursuit of rational policy formulation in democratic politics. Prereq: Graduate standing or consent of instructor.

EPE 620 TOPICS AND METHODS OF EVALUATION. (3)
An examination of a subset of evaluation methods, topics, and problems. An introductory course in the area with minimal emphasis on quantitative methods. The course is designed to: provide a perspective from which evaluation studies may be viewed; and, to provide experiences for those who will learn from or conduct evaluations. Prereq: Consent of instructor, and a basic course in statistics or research. (Same as ANT/EDP 620/SOC 622.)

EPE 621 ADVANCED TOPICS AND METHODS OF EVALUATION. (3)
An advanced course in evaluation methods and techniques with an emphasis on quantitative methodology. State of the art ideas and methods of conducting evaluation studies and analyzing data from those studies are presented. The course is designed primarily for those who are conducting or will conduct evaluation studies. Prereq: A basic course in statistics or its equivalent; EDP/EPE 620/SOC 622; and consent of instructor. (Same as ANT/EDP 621.)

EPE 628 ETHICS AND EDUCATIONAL DECISION MAKING. (3)
Examination of ethical theories upon which educational evaluations are based and upon which they become the basis for educational policies. Theories considered include classical and utilitarianism, Rawlsian social justice, behavioristic, critical, and hermeneutic theories of value. Prereq: EPE 603 or consent of instructor.

EPE 629 FUTURISTICS AND EDUCATIONAL POLICY. (3)
Historical, literary, and scientific prognostications of education in the future. Primary emphasis: methodologies of forecasting educational futures, using simulations, statistical projections, scenario inventions, and systems planning. Implications for educational planning and curriculum development will be examined. Prereq: Graduate level standing or consent of instructor.

EPE 640 PHILOSOPHY OF EDUCATION. (3)
The course is designed to enhance the professional educator’s competence in analyzing and evaluating educational policies and programs. Theoretical frameworks, philosophical methods, and current educational debates are examined. May be repeated once to a maximum of six credits. Prereq: Twelve semester hours in education or permission of instructor.

EPE 646 ANALYSIS OF THINKING. (3)
An interdisciplinary analysis of thinking. The central process of education. Topics studied include psychological, logical, and semantic aspects of thought. Prereq: EDP 548 and EPE 640, or consent of instructor.

EPE 651 HISTORY OF EDUCATION IN THE UNITED STATES. (3)
A history of the growth and development of education in the United States from earliest colonial times to the present, including recent movements and trends.

EPE 652 HISTORY OF EDUCATIONAL THOUGHT. (3)
Description and critical examination of the core ideas of leading educational theorists in the history of Western culture. Emphasis upon the societal and cultural conditions in which the ideas emerged, and the relevance of these ideas to contemporary educational policy concerns.

EPE 653 HISTORY OF HIGHER EDUCATION. (3)
Social and institutional history of higher education which will include selected topics in European culture and education and which will emphasize the development of the American college and university.

EPE 661 SOCIOLOGY OF EDUCATION. (3)
A study of schooling and education using basic analytic paradigms of sociology. Emphasis on schools as formal organizations and education in a changing, technologically oriented and stratified society. Prereq: SOC 101 or equivalent. (Same as SOC 661.)

EPE 663 FIELD STUDIES IN EDUCATIONAL INSTITUTIONS. (3)
Field research in an educational setting. Questions of theory, method, and application examined. Students plan and implement a study under faculty supervision. May be repeated to a maximum of six credits. Prereq: Consent of instructor.

EPE 665 EDUCATION AND CULTURE. (3)
An analysis of the cultural role and function of educational institutions and processes. Topics considered include schooling as cultural transmission, the community context of education, cross-national studies of schools, and implications of anthropological approaches for teacher training.

EPE 667 EDUCATION AND GENDER. (3)
The course examines the relationships between gender and education in U.S. society. The focus will be on the formation and enactment of gender within social and educational institutions. Using a variety of source materials and theories, we will address the following questions. How and what do educational institutions teach about gender? And how do females and males respond to these learning contexts? In what ways are social class, race and ethnicity important to engendering our lives? How does schooling contribute to the differential experiences of women and men in their transitions to adult work in the domestic and waged labor forces? How can education contribute to societal changes in sex equity?

EPE 670 POLICY ISSUES IN HIGHER EDUCATION. (3)
A survey of modern tendencies in higher education; scope and development, objectives, organization, administration, curricula, finance, faculty and student personnel. Designed primarily for prospective college administrators, teachers, and registrars.

EPE 672 COLLEGE TEACHING AND LEARNING. (3)
A study of all phases of instruction at the college level. The course will include methods and principles of teaching, utilization of materials in teaching, a consideration of the teaching-learning process as it relates to the individual student, and the evaluation of student progress. A comprehensive course for prospective college teachers.

EPE 674 THEORIES OF STUDENT DEVELOPMENT. (3)
A study of college student behavior, relationship of student personnel to total college program, organization and administration, evaluation, and research of college student personnel.

EPE 676 ORGANIZATION AND ADMINISTRATION OF HIGHER EDUCATION. (3)
Purposes and scope of higher education, organization, general administration, faculty administration, inter-institutional cooperation, allocation of financial resources, state systems of higher education.

EPE 678 ECONOMICS OF HIGHER EDUCATION. (3)
This course addresses issues of equity and efficiency by analyzing 1) how students, faculty and institutions are influenced by markets and incentives, 2) the economic impact of higher education on students and society, and 3) the financial management of institutions.

EPE 679 MULTIPLE MEASURES IN EDUCATION AND EVALUATION. (3)
Quantitative techniques for dealing with multiple measures of persons, programs, or products. Appropriate techniques for pretest-postest designs, multiple outcome measures, reliability, time series and other situations where there are multiple measurements. Prereq: EPE 621 or its equivalent.

EPE 748 MASTER’S THESIS RESEARCH. (0)
Half-time to full-time work on thesis. May be repeated to a maximum of six semesters. Prereq: All course work toward the degree must be completed.

EPE 749 DISSERTATION RESEARCH. (0)
Half-time to full-time work on dissertation. May be repeated to a maximum of six semesters. Prereq: Registration for two full-time semesters of 769 residence credit following the successful completion of the qualifying exams.

EPE 763 ADVANCED FIELD STUDIES. (3)
This course continues an exploration of qualitative research methods in the study of education. It focuses on advanced data collection techniques and particularly on methods of data analysis, representation and writing. The course revolves around an experiential core of individual student research products. May be repeated to a maximum of six credits. Prereq: EPE 663, other introductory qualitative research methods courses or instructor’s permission.

EPE 768 RESIDENCE CREDIT FOR THE MASTER’S DEGREE. (1-6)
May be repeated to a maximum of 12 hours.
**Emergency Medicine**

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<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ER 815</td>
<td>FIRST-YEAR ELECTIVE, EMERGENCY MEDICINE.</td>
<td>(1-3)</td>
<td>With the advice and approval of his or her faculty adviser, the first-year student may choose approved electives offered by the Department of Emergency Medicine. The intent is to provide the student an opportunity for exploration and study in an area which supplements and/or complements required course work in the first-year curriculum. Pass-fail only. Prereq: Admission to first year, College of Medicine.</td>
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<tr>
<td>ER 825</td>
<td>SECOND-YEAR ELECTIVE, EMERGENCY MEDICINE.</td>
<td>(1-4)</td>
<td>With the advice and approval of his or her faculty adviser, the second-year student may choose approved electives offered by the Department of Emergency Medicine. The intent is to provide the student an opportunity for exploration and study in an area which supplements and/or complements required course work in the first-year curriculum. Pass-fail only. Prereq: Admission to second-year medical curriculum and approval of adviser.</td>
</tr>
<tr>
<td>ER 835</td>
<td>THIRD-YEAR ELECTIVE, EMERGENCY MEDICINE.</td>
<td>(1-6)</td>
<td>Elective offerings in basic medical sciences and clinical medicine; will vary in length from 25-150 hours and will carry one to six hours credit. Electives will be chosen with the advice and approval of faculty advisor and Curriculum Committee. Prereq: Admission to the third year, College of Medicine.</td>
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<tr>
<td>ER 850-899</td>
<td>FOURTH-YEAR ELECTIVE FOR MEDICAL STUDENTS.</td>
<td>(1-6)</td>
<td>With the advice and approval of the faculty adviser and the Student Progress and Promotions Committee, the fourth-year student may choose approved electives offered by the various departments in the College of Medicine. The intent is to provide the student an opportunity to develop his fund of knowledge and clinical competence. Prereq: Admission to the fourth year, College of Medicine and/or permission of the Student Progress and Promotions Committee.</td>
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**Environmental Systems**

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<tr>
<td>ES 600</td>
<td>ENVIRONMENTAL SYSTEMS SEMINAR.</td>
<td>(1)</td>
<td>A series of presentations by experts in the field on environmental systems topics including topics from the fields of law, economics, social sciences, medicine, biology, engineering and physical sciences. May be repeated to a maximum of two credits.</td>
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<tr>
<td>ES 610</td>
<td>ENGINEERING AND PHYSICAL SCIENCES IN ENVIRONMENTAL SYSTEMS.</td>
<td>(3)</td>
<td>Earth systems: environmental impacts of natural and human processes; the role of water systems on the earth including surface water systems, groundwater systems, and water quality and contamination systems; the role of atmospheric systems on earth including the nature and source of air pollutants, meteorological principles, radiation balance, climatology and air pollution, and air pollution control methodology; and processes and principles involved in waste producing organizations. Prereq: Freshman chemistry.</td>
</tr>
<tr>
<td>ES 620</td>
<td>NATURAL, BIOLOGICAL AND MEDICAL SCIENCES IN ENVIRONMENTAL SYSTEMS.</td>
<td>(3)</td>
<td>A survey course for students outside the biological and medical sciences. Concepts in environmental systems, toxicology, ecology and the environment, ecotoxicology and environmental health. Prereq: A background in physical sciences or introductory biology and chemistry.</td>
</tr>
<tr>
<td>ES 630</td>
<td>LEGAL, SOCIAL AND ECONOMIC SCIENCES IN ENVIRONMENTAL SYSTEMS.</td>
<td>(3)</td>
<td>Jurisprudential history, ethics and rule of law, environmental economics, history of science, governmental structures, processes for development and enforcement of standards, social/political implications of environmental systems, regulatory schemes for environmental control.</td>
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**Experiential Education**

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<tr>
<td>EXP 396</td>
<td>EXPERIENTIAL EDUCATION.</td>
<td>(1-12)</td>
<td>A community-based or field-based learning experience under the supervision of a faculty member. May be repeated to a maximum of 30 credits. Pass/fail with departmental permission required for letter grade. Prereq: Completion of departmental learning agreement and filing of the agreement in OEE. Consent of major department chairperson and instructor required.</td>
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