

**488 Humor Writing for Print, Broadcast (3)**  
Prereq: jr or sr, perm. Theory and techniques of writing humor for newspapers, magazines, speeches, and other media.

**489 Journalism Workshop (1-4)**  
Selected topics of journalism and mass communication, including newspapers, yearbooks, advertising, magazines, photojournalism, public relations, and publications advising. May be repeated to total 10 hrs of credit.

**490 Independent Study (1-4, max 15)**  
Prereq: written proposal and perm. See title.

**491 Research in Journalism and Communications (1-15)**  
Prereq: perm.

**492 Seminar (1-5)**  
Prereq: perm. Selected topics of current significance. May be repeated with different topics to 12 hrs credit.

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## Latin

See Foreign Languages and Literatures.

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## Latin American Studies

See International Studies.

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## Law Enforcement Technology (LET)

The following courses for the A.A.S. in law enforcement technology are available on the Chillicothe, Lancaster, and Southern campuses:

**100 Introduction to Law Enforcement Technology (3)**

Philosophy and history of law enforcement; overview of crime and police problems; organization and jurisdiction of local, state, and federal law enforcement agencies; survey of professional career opportunities and qualifications required.

**105 Ethics and Legal Issues (4)**

Provides a fundamental base of knowledge concerning contemporary law enforcement ethical and legal issues such as use of force, corruption, professional behavior, code of ethics, ethical dilemmas, and historical cases of ethical misconduct.

**110 Police Role in Crime and Delinquency (3)**

Extent and distribution of crime and delinquency, with special emphasis on basic factors and conditions contributing to problem; some case study and evaluation of community resources in prevention field and detailed review of role of school, family, religious institutions, law enforcement agencies, courts, and correctional institutions. Part law enforcement agencies play in juvenile delinquency control, organization and functions of related juvenile agencies, laws governing handling of juvenile offenders, and brief resume of juvenile court and its jurisdiction.

**120 Constitution, Criminal, and Civil Law (3)**

Prereq: 100. Study of U.S. Constitution and amendments thereto by text material and case method system; major emphasis on freedom of speech, search and seizure, arrest and detention, interrogation and confession, self-incrimination, right to counsel, double jeopardy, and due process situations.

**130 Interviewing and Report Writing (3)**

Examination of interviewing and interrogation procedures employed by law enforcement for obtaining information, plus practical experience in use of methods. Mechanics of writing reports, including collecting information and taking statements, writing descriptive narratives, and report revision.

**140 Introduction to Criminalistics (3)**

Survey of systematic collection of evidence and potentialities and recommendations of applied science to criminal investigation. Includes demonstration of techniques used in processing criminal evidence and practical experience in selected crime lab methods.

**145 Introduction to Forensic Science (4)**

Survey of the systematic collection of evidence and potentialities with recommendations from applied science regarding criminal investigation. Includes demonstration of techniques used in processing criminal evidence and practical experience in selected crime scene processing, crime lab methods, and forensic science. Students with little or no previous laboratory experience, will receive an overview of actual laboratory analyses performed on physical evidence as if submitted to a crime laboratory. The student will acquire knowledge through conducting experiments regarding best practices of a crime laboratory. The student will discover the importance of maintaining the integrity of physical evidence, quantities required to conduct analyses, and how to prepare physical evidence for court presentation. Credit not allowed for both 140 and 145. 3 lec., 2 lab.

**150 Police Patrol Operations (3)**

Focus on patrol function. Examination of purposes, methods, techniques, and types of patrol. Overview of support services, examination of various police services and public assistance, and analysis of deployment procedures and practices as related to overall mission of police patrol.

**200 Procedures, Rules, and Test of Evidence (4)**

Prereq: 120 or perm. Instruction designed to acquaint officer with court system in Ohio, its functions, authority, and duties. Explains workings of all courts of record and provides description of mayor's courts which are only courts not of record in State of Ohio. Kinds and degrees of evidence. Admissibility of evidence in criminal court cases, materiality and competency of evidence. Distinction between admissions and confessions; exceptions to hearsay rule; types of evidence.

**210 Cybernetics (3)**

Application and use of computers and/or automated systems for rapid storage and retrieval of information. Types of electronic data processing systems and their compatibility with contemporary police operations explored.

**215 Cybernetics and Principles of Information Competency (4)**

Examination of the application and use of computers and/or automated systems for rapid storage and retrieval of information. Students will explore the types of electronic data processing systems and their compatibility with contemporary police operations. Students are introduced to the five Information Competency Principles to develop the skills necessary to achieve information competency. Students will apply information competency to criminal justice research developing skills through library research, practice in MLA and APA documentation. Credit not allowed for both 210 and 215. 3 lec. 2 lab.

**220 Court Procedures and Processes (3)**

Case preparation, officer testimony and demeanor in court, effective preparation and presentation of criminal evidence, trial procedures, utilization of written notes, and reaction to cross examination.

**230 Police Community Relations (3)**

Nature of relationships between police and various segments of community; racial and/or ethnic minorities, news media, clergy, and youth explored. Historical reasons for present dilemma and suggested changes to alleviate these problems.

**240 Law Enforcement, Administration, and Supervision (3)**

Prereq: 100. Principles of law enforcement agency administration. Organization, planning and research, management, personnel management, training, and public relations. Administrative functions in vice control, crime delinquency prevention and control, patrol, investigation, communications, statistics, and records.

**245 Law Enforcement, Administration, and Leadership (4)**

Prereq: 100. Examination of the principles of law enforcement agency administration. Organization, planning and management, personnel management, training, and public relations represent a partial list of administrative topics covered. Administrative functions covered include, patrol, investigation, communications, statistics, and records. The role leadership plays in a contemporary law enforcement organization. Police promotional assessments and how to perform to your maximum potential. Credit not allowed for both 240 and 245.

**250 Vice and Narcotic Control (3)**

Prereq: 140. Exploration of history, identification, and effects of narcotics. Narcotic and vice problem as it exists and penal statutes affecting control of narcotics and vice studied.

**255 Criminal Justice Research Methods (4)**

Introduction to criminal justice research methodology, emphasizing the development of practical reasoning skills necessary for the comprehension and critical evaluation of criminal justice statistical information. The student will develop knowledge of Internet surveys, research ethics, research methodology and design, and data analysis.

**260 Criminal Investigation (3)**

Fundamentals of investigation; crime scene search and recording; correction and preservation of physical evidence, scientific aids, modus operandi, sources of information, interviews and interrogation, follow-up, and case preparation. 3 lec, 2 lab.

**265 Introduction to Criminal Investigation**

The purpose of this course is to provide law enforcement students an introduction to the fundamentals of criminal investigation; crime scene search and recording; collection and preservation of physical evidence, scientific aids, modus operandi, sources of information, interviews and interrogation, case preparation and management. Students with little or no previous laboratory experience, will receive an overview of actual laboratory analyses performed on physical evidence as if collected at the crime scene for submission to a crime laboratory. Credit not allowed for both 260 and 265. 3 lec. And 2 lab.

**270 Arrest, Search, and Seizure (3)**

Prereq: 200. In-depth discussion of moral and legal obligations in use of police weapons. Includes legal provisions, safety precautions, and restrictions in use of firearms. Advanced theories and application, police combat shooting, all-weather firing, and new developments in police weaponry. Training for student in lawful methods of search and seizure and discussion of search of persons, places, and things, with emphasis on legality. Applicable court decisions and rulings presented and discussed. 3 lec, 2 lab.

**275 Law Enforcement and the Deaf (4)**

Problems involved in working with a deaf suspect/victim. Includes different types of deaf, different sign languages, problems in communication, cultural aspects, and protecting individual rights and the officer's case. Covers ADA requirements for law enforcement, courts, and attorneys.

**276 Legal Rights of Hearing Impaired (4)**

Up-to-date legislation involving hearing impaired/deaf citizens.

**280 Traffic Enforcement, Education, and Engineering (3)**

Prereq: 100. Law relating to registration of motor vehicles, driver's license, Vehicle Code sections most often encountered and violated, regulation and traffic control, traffic accident investigation, traffic accident report forms; types and uses.

**290 Special Problems (3)**

Provides opportunity for students to explore topics of interest on individual basis, or in structured courses developed as common interest arises.

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## Library Science

See Education—Curriculum and Instruction.

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## Linguistics (LING)

**270 The Nature of Language (5) (25)**

Nontechnical introduction to the basic nature of human language: its sound patterns, structure of words and sentences, nature of meaning, children's acquisition of language, animal communication, ways languages change, etc.

**275 Introduction to Language and Culture (4)**

Prereq: soph or above. Study of similarities and differences of language behavior in variety of cultural contexts.

**280 Language in America (4)**

Prereq: soph or above. Analysis of similarities

and differences in language behavior in America, including dialects and immigrant languages.

**330 Introduction to Psycholinguistics (4)**  
Prereq: 270 or 350 or 351 (or concurrent) or perm. Study of linguistic behavior and psychological mechanisms responsible for it.

**350 Introduction to Linguistics (5)**  
Prereq: jr or sr; credit not given for both 270 and 350. Technical introduction to linguistic principles and methods of description in the areas of phonetics, phonology, morphology, syntax, and semantics.

**351 Fundamentals of Linguistics (5)**  
Prereq: 270 or HSL5 208; credit not given for both 350 and 351. General course in fundamental linguistic principles; duality of patterning; phonetics/phonology; syntax/semantics; morphology.

**360 Sounds of World Languages (4)**  
Prereq: 270 or 351 or HSL5 208 or SP 437 or FR 437. Articulatory and acoustic description of English and other languages of the world through work with native speakers.

**390 Language of Women and Men (4)**  
Prereq: jr or perm. American speech as used by women and men in terms of linguistic and social factors.

**395 Introduction to Area Linguistics (3-5)**  
Prereq: perm. Investigation of linguistic characteristics of specific group or subgroup of languages within Malayo-Polynesian or African families.

**410 Language Teaching Practicum (3)**  
Prereq: 475 and 480. Practice in the teaching of English as a second or foreign language with faculty supervision.

**412 Internship in TESOL (1-5)**  
Prereq: perm. Practice in ESL teaching, instructional support, and/or program administration.

**440 Introduction to Bilingualism (4)**  
Prereq: 270 or 350 or 351 (or concurrent) or perm. Introduction to bilingual theories from psychological, sociological, educational, and linguistic perspectives.

**451 Computers for Language Teaching I (4)**  
Prereq: 270 or 350 or 351 (or concurrent) or perm. Introduction to uses of computers for language teaching, software selection, and creation of supplementary computer-assisted language learning (CALL) materials.

**452 Computers for Language Teaching II (4)**  
Prereq: 451 and 480 or ML 445 or perm. Creation of CALL materials using authoring packages, authoring languages, or programming languages.

**453 Computers for Language Teaching III (4)**  
Prereq: 452. Developing a comprehensive CALL package.

**460 Phonology (5)**  
Prereq: 270 or 350 or 351 (or concurrent) or perm. Introductory course in analysis of sound systems of natural languages.

**470 Syntax (4)**  
Prereq: 270 or 350 or 351. Introduction to theory and application of grammatical analysis of natural languages.

**475 Theories of Language Learning (4)**  
Prereq: 270 or 350 or 351 or concurrent. Introduction to research in second language acquisition and its implications for language teaching methodology.

**480 TEFL Theory and Methodology (4)**  
Prereq: 475 or concurrent. Second language teaching theory and methodology, with emphasis on teaching English as foreign language.

**481 Methods and Materials in TESL (4)**  
Prereq: 475 or concurrent. Introduction to methods, techniques, and materials useful in the teaching of English in second language contexts and specifically in the public schools.

**482 Materials in TEFL (4)**  
Prereq: 480 or concurrent. Theory and practice of analysis, evaluation, and creation of instructional materials for teaching English as a foreign language.

**483 Testing in TESL (4)**  
Prereq: 480 or 481 or concurrent or perm. Evaluation and writing of language test items appropriate for measuring global competency and competency in specific skill areas. Entry and exit testing for public school ESL programs also discussed.

**485 Historical Linguistics (4)**  
Prereq: 460. Study of genealogical classification of languages, and of historical change in language systems.

**490 Sociolinguistics I (4)**  
Prereq: 270 or 350 or 351. Observation and analysis of similarities and differences of language behavior in variety of linguistic and sociocultural contexts.

**491 Sociolinguistics II (4)**  
Prereq: 490. Introduction to relationships between interlocking systems of language and social grouping.

**495 Directed Research (4)**  
Prereq: perm. Independently directed project on a particular topic of interest in linguistics; required of all majors. 2 credits in winter, 2 credits in spring.

**496 Field Methods (4)**  
Prereq: 460 and 470. Methods of eliciting, transcribing, organizing, and analyzing linguistic data.

**499 Special Studies in Linguistics (1-3)**  
Prereq: perm. Independent study of particular area of interest in linguistics.

## Malaysian

See Foreign Languages and Literatures.

## Management (MGT)

**100 Managing (2)**  
Introduces the basic concepts of management and the basic functioning of business. In addition, students develop an understanding of current issues confronting managers in business and nonprofit organizations. Emphasis on starting to develop the skill to reason like a manager.

**191 Workshop in Management (1-4)**  
Provides traditional and nontraditional students with specialized course offerings directed toward identified needs. Facilitates offering short courses, workshops, and institutes involving intensified instruction in pertinent management areas.

**202 Management (4)**  
Prereq: soph. Understanding of and practice in solving problems facing managers and administrators using concepts and principles from behavioral sciences and other applicable disciplines.

**240 Introduction to Management and Organization (4)**  
Prereq: soph; College of Business majors only. Provides an introductory coverage of topics in management. The course offers an early focus on teamwork and group dynamics to assist students when they take the integrated cluster. The course also includes specific assignments designed to enhance COB majors' Electronic Student Portfolios. No credit for both 240 and 202.

**298 Internship (1)**  
Prereq: perm. Internship experience that provides on-site exposure to general business operations and procedures. Intended for experiences following the freshman year.

**340 Organizational Behavior (4)**  
Prereq: jr. Examines the behavior of individuals and groups in organizations. Focus on high performance and satisfaction in the modern workplace, and in context of cultural diversity, globalization, ethical behavior, and social responsibility. Designed to enhance career readiness in management and team leadership.

**345 Organizational Behavior—Macro Perspective (4)**  
Prereq: jr. Organizational theory and behavior emphasizing formal organizational theory and work group behavior. Concentrates on interaction between organization, its environment and its members, and influences of informal work groups on member behavior.

**350 Creativity and Innovation Management (4)**  
Prereq: jr. Examination of the role of creativity and innovation in business with a particular focus on the management of the innovation process. Students will explore personal creativity, management practices that enhance or suppress creativity, the relationship between creativity and innovation, and the process of innovation in a business setting.

**398 Internship (1-4)**  
Prereq: perm. Internship experience that provides opportunities to learn by participating in day-to-day activities of a business concern for at least four consecutive weeks. Intended for experience following the sophomore year.

**430 Management Systems—Decision Making (4)**  
Prereq: 202 or 240 or perm. Decision making and problem solving in organizations from managerial perspective.

**462 Women in Management (4)**  
Prereq: junior. This course explores a variety of social-psychological research on gender issues that affect work behaviors in today's rapidly changing workforce. Emphasis is placed on student activities, research of pertinent topics, readings, reports, online dialogue, and incorporates community service learning.

**480 Managing Transformations and Organizational Change (4)**  
Prereq: 340. Examines theories, concepts, and applications relating to change leadership in the modern workplace. Focus on internal processes of organizational transformation, change, and development. Designed to improve leadership potential through understanding change models and strategies, resistance to change and change leadership roles in the context of a dynamic, uncertain, and ever-changing external environment.

**484 International Comparative Management (4)**  
Prereq: sr. Survey and analysis of similarities and differences in management systems, processes, and styles, as well as evaluation of changes and their impact in selected groups of countries.

**486 Business World of Asia (4)**  
Prereq: 202 or 240 or sr or perm. Examines the current business environment of Asia from the perspective of contemporary history, culture, religion, political economy, geography, and current events. Emphasis is given to developing awareness of global information resources on prospects for active business involvement in Asia. Students are encouraged to develop special expertise in one of the Asian countries, to network with one another for broader understanding, and to pursue in-depth areas of special personal interest.

**490 Strategic Business Leadership (4)**  
Prereq: MGT 340, MGT 350, and sr. Examination of the leadership theories in the context of the strategic business challenges of increased global competition, advances in technology, and the importance of intellectual capital. The focus is on the executive ability to make strategic choices that generate superior performance within and by organizations. *Tier III equivalent course.*

**491 Seminar (3-5)**  
Prereq: jr or perm. Selected topics of current interest in management and organizational behavior area.

**492 Management Thought (4)**  
Prereq: sr. Review of development of managerial theories from 5000 B.C. to present with consideration of their application to current organizational settings.

**494 Management Research (4)**  
Prereq: 12 hrs of management courses. Practical application of research methods in behavioral sciences to management problems, emphasizing research available and its use in decision making and in solving managerial problems.

**497 Independent Research (1-4)**  
Prereq: perm. Research in selected fields of management and organizational behavior under direction of faculty member.

**497H Independent Research (1-4)**  
Prereq: 3.3 g.p.a., written proposal, and perm. Independent research. Course content selected by professor and student.

**498 Internship (1-4)**

Prereq: perm.

**499 Strategic Business Leadership Portfolio (1)**

Prereq: MGT 340, 350, 480, and 490 or concurrent. Formalizes in an electronic portfolio a comprehensive demonstration and self-assessment of the student's career readiness for strategic business leadership. Involves a formal portfolio defense. A "CR" must be received in this course to graduate with a major in Management and Strategic Leadership.

## Management Information Systems (MIS)

**101 Introduction to Microcomputers (3)**

Introduces student to computer concepts within the framework of business applications. Students do computer assignments including word processing, spreadsheet analysis, presentation software, and web pages. No credit for both 101 and CS 120.

**201B Introduction to Information Analysis and Design (4)**

This course introduces students to the systems development life cycle in the context of preparing effective information designs to help solve business problems. Students critically analyze business problems and develop high quality information designs that inform and support management decisions using personal computer software tools.

**202 Business Information Systems (4)**

Prereq: 201 or 201B, and COB. Addresses issues that arise in dealing with management information as a business resource. As an introduction to the field of management information systems, topics covered deal with computer technologies, information development, and impact of information systems on business organizations at a variety of levels, from personal information systems to organization information architectures. Major attention is given to the implications of information systems for achieving competitive advantage.

**220 Introduction to Business File Processing (4)**

Prereq: 201 or 201B and COB. Students learn to write programs in a GUI environment to solve business problems. Structured programming is emphasized.

**225 Prototyping and Fourth Generation Languages (4)**

Prereq: 220 Students will learn how to write business applications using fourth generation languages to process data in an object-oriented environment.

**230 Advanced Microcomputer Spreadsheet Applications (4)**

Prereq: 101 or 201 or CS 120 or CTCH 125 or BMT 200 or HS 309 or IT 103. Advanced functions of spreadsheet programs will be examined. Groups of spreadsheet applications will be integrated to create systems designed to support common business functions.

**235 Advanced Microcomputer Data Base Applications (4)**

Prereq: 101 or 201 or BMT 200 or CTCH 125 or CS 120 or HS 309 or IT 103. Relational data base software will be used to create integrated data storage and retrieval systems. These systems will be used to solve business problems.

**298 Internship (1)**

Prereq: perm. Internship experience that provides on-site exposure to general business operations and procedures. Intended for experiences following the freshman year.

**320 Business Systems I (4)**

Prereq: 220 Coreq: MIS 380, and COB. First of a two-part series related to the development of computer information systems in business. This course looks at the planning and management of information systems development projects, along with tools for requirements analysis and evaluation of alternatives. Emphasis on prototyping and use of fourth generation languages.

**325 PC LAN Applications (4)**

Prereq: 220 and COB Introduction to Local Area Networks. Students serve as network administra-

tors to install, cable, and configure a Local Area Network. Topics include creating users, installing software, setting up printers, establishing security, and managing the network.

**380 Business Data Base I (4)**

Prereq: 220 and COB. Coreq: 320. Focuses on the use of relational data base technology in implementing business applications. Emphasizes the concepts of data base design and implementation and gives students a chance to create their own data bases.

**398 Internship (1-4)**

Prereq: perm. Internship experience that provides opportunities to learn by participating in day-to-day activities of a business concern for at least four consecutive weeks. Intended for experience following the sophomore year.

**400 Contemporary Business Programming (4)**

Prereq: 320 and 380. Students learn how to develop business applications using contemporary business programming tools and techniques. Programming languages and development environments are revised periodically based on accepted and evolving business practice.

**420 Business Systems II (4)**

Prereq: 400 and 325. Coreq: 485. Second of a two-part series on the development of computer information systems in business. This course looks at tools for design and implementation of computer information systems, along with testing and maintenance of systems.

**430 IBM COBOL (4)**

Prereq: 320 and 380. Deals with application of COBOL programming language to problems in marketing, finance, management, accounting, and economics.

**455 Distributed Systems (4)**

Prereq: 325 and COB. This class treats organization-wide networking, comparing the advantages and disadvantages of various network configurations. The class emphasizes Wide Area Network planning, with special attention to data administration policies and procedures.

**460 Introduction to Groupware Applications (4)**

Prereq: 320, 380 and COB. Introduction to the industry standard groupware product, Lotus Notes. The purpose of this course is twofold: (1) an understanding of groupware, groupware applications, and business implications of these applications, and (2) hands-on experience with using Lotus Notes and designing/developing groupware applications.

**480 Business Data Base II (4)**

Prereq: 380. This course builds on the concepts learned in Business Data Base I. Students learn to use advanced data base features in a lab-oriented environment. Applications will be written to solve business problems using the data stored in the data base.

**485 Management Information Systems (4)**

Prereq: 400 and 325 and sr rank. Coreq: 420. This is the capstone course for MIS majors. It will focus upon ways in which information systems can be created to give competitive advantages to businesses. The class will emphasize the management of computing from a people and data perspective, demonstrating that computer-based systems are increasingly the principal tool of effective management. *Tier III equivalent course.*

**491 Seminar (1-4)**

Prereq: 320, 380. Selected topics of current interest in the management information systems area.

**492 Lab Assistant Seminar (1-15)**

Prereq: perm. Students assist instructors with advising of students in lab classes. Assistants must receive an A in the lab class to be eligible to serve as an assistant. One hour of credit is given for three hours of assistant work.

**497 Independent Research (1-4)**

Prereq: accepted proposal and perm. Research in selected fields in management information systems under the direction of a faculty member. Student must submit a proposal and have it accepted by a faculty member before taking this course.

**498 Internship (1-4)**

Prereq: 12 hrs of MIS courses above 100, perm.

## Marketing (MKT)

**101 Consumer Survival in the Marketplace (4)**

How a consumer can adapt himself or herself to modern marketing environment to increase satisfaction derived from spending his or her money.

**202 Marketing Principles (4)**

This course provides a broad understanding of marketing activities, decisions, and terms with an emphasis on the practices and problems of marketing managers and the analysis of the marketing environment.

**240 Introduction to Marketing Management (3)**

Prereq: No credit for both 240 and 202. This course provides an introductory coverage of topics in marketing. The course offers an early focus on the elements of the marketing mix to assist students when they take the integrated cluster. The course also includes specific assignments designed to enhance COB majors' understanding of marketing activities and strategies.

**258 Skills for Professional Development (4)**

Focuses on developing personal skills such as time management, networking, telephone use, computer etiquette, business etiquette, positive thinking, stress management, career planning, listening, and mapping the informal organization. Topics chosen by instructor.

**298 Internship (1)**

Prereq: perm. Internship experience that provides on-site exposure to general business operations and procedures. Intended for experiences following the freshman year.

**358 Professional Selling Techniques (4)**

Prereq: 202; marketing major or perm. This course combines personal selling theory with actual practice. Students learn skills needed for successful careers in sales and marketing.

**379 Marketing Research (5)**

Prereq: 202; QBA 201 or equiv. statistics course. This course provides an introduction to the field of marketing research for effective decision-making. Students will learn techniques involved in collection, tabulation, and analysis of marketing information.

**398 Internship (1-4)**

Prereq: perm. Internship experience that provides opportunities to learn by participating in day-to-day activities of a business concern for at least four consecutive weeks. Intended for experience following the sophomore year.

**404 Logistics and Supply Chain Management (4)**

Prereq: 202; ACCT 102; preference to majors. Problems encountered by manufacturer in establishing and maintaining effective distribution system, concentrating on channel design and strategies.

**420 Services Marketing (4)**

Prereq: Prereq: 202 or perm. This course reflects the increasing proportion of GNP taken up by the service sector. Industries that do not sell a physical good as their main offering to the public are examined. These could include the recreations industry, government agencies, financial institutions, and professional (legal, medical) services.

**425 Business to Business Marketing (4)**

Prereq: 202. This course introduces the field of business-to-business (B2B) marketing. The course answers the questions: What is business marketing? In what markets does it occur? Topics include: Organizational buyer behavior, methods of assessing business market opportunities, and business marketing strategies.

**441 International Marketing (4)**

Prereq: 202; preference to majors. This course focuses on understanding the major issues facing international/global marketing managers today through the application of marketing principles in the international/global business environment.

**444 Consumer Behavior (4)**

Prereq: 202. This course illustrates the practical importance of understanding consumers' knowledge and attitudes, incorporating various approaches for assessing such knowledge and

attitudes. It identifies major factors that influence how consumers process and learn marketing information and considers various techniques marketers can use to influence consumer attitudes and behavior.

#### 450 Management of Promotion (4)

Prereq: 202; preference to majors. This course integrates communication theory, concepts and research with in-depth treatment of the following elements of the promotional mix: advertising, sales promotions, public relations, and point-of-purchase communications.

#### 455 Achieving Customer Satisfaction and Service Excellence (4)

Prereq: 202. This course teaches students how companies can retain their current customers and develop long-term profitable relationships with them.

#### 458 Sales Management (4)

Prereq: 358. Principles and practices in planning, organizing, and controlling sales force. Selection, training, compensating, supervising, and stimulating salespeople. Analysis of sales potentials and costs.

#### 463 Marketing Strategy (4)

Prereq: 20 hrs of MKT including 202 and 379. This capstone course focuses on the integration of marketing knowledge accumulated as a marketing major. It includes situation analysis and development of strategic marketing plans. Consideration is given to the complex dynamic environment in which all marketing activities take place. *Tier III equivalent course.*

#### 491 Seminar (1-4)

Prereq: perm. Selected topics of current interest in marketing area.

#### 493 Readings (1-4)

Prereq: perm. Readings in selected fields of marketing. Topics selected by student in consultation with faculty member.

#### 497 Independent Research (1-4)

Prereq: perm. Research in selected fields of marketing under direction of faculty member.

#### 498 Internship (1-4)

Prereq: perm.

## Materials Management Technology (MMT)

The following courses for the proposed A.A.S. in materials management technology are available only on the Lancaster campus:

#### 101 Introduction to Materials Management (4)

Introduction to career of materials management, covering roles and responsibilities of the materials manager and how they relate to manufacturing processes.

#### 189 Special Topics (1-3, max 9)

Prereq: 101. Special topics that are current and relevant to the materials management field. May be repeated.

#### 200 Computer Applications in Materials Management (4)

Computer applications in materials management, including the use of data bases for inventory control, purchasing, and other electronic information. Also covers computer applications for electronic communications. 2 lec, 4 lab.

#### 250 Shipping and Warehousing (3)

Prereq: 101. Shipping and warehousing of materials from point of origin to point of destination, emphasizing packaging, transportation, and storage. 2 lec, 2 lab.

#### 262 Plant Layout and Material Handling (3)

Prereq: 101. Basic principles of plant facilities layout in relation to the flow of material through the workplace, including study of material handling system to move material in bulk or containers to and from the manufacturing processes. 2 lec, 2 lab.

#### 263 Process Control (3)

Prereq: Tier I MATH Analysis of basic principles of quality control, including frequency distribution, sampling inspection, and charts and gauges

related to inspection. Field trips part of lab activity. 2 lec, 2 lab

#### 264 Production Scheduling (3)

Various established techniques of scheduling, analyzing, and improving production operations. Focuses on detailed study of applications for CPM, PERT, MRP, and other production systems. 2 lec, 2 lab.

#### 270 Introduction to Organizational Behavior (4)

Types of behavior organizations exhibit and human relations skills. Covers face-to-face discussions, dialogue over the phone, and other communication skills.

#### 289 Independent Study (1-5, max 5)

Prereq: 101. Study of a particular topic pertinent to the materials management field under direction of a faculty member. May be repeated. 1-5 lec, 2-8 lab.

#### 290 Externship (4)

Prereq: 101, 200, 250, 262, 263, 264. Performance of materials manager duties in a supervised, unpaid experience, working 28 hours/week with local businesses. Efforts are made to rotate experience.

## Mathematics (MATH)

#### 101 Basic Mathematics (4)

Prereq: placement level Dev1. Developmental course in arithmetic and elementary algebra for students with unusually weak backgrounds. Credit applies as hours toward graduation but meets no other college requirement. No credit to student who has passed higher-level mathematics course.

#### 102 Elementary Algebra (4)

Prereq: 101 or placement level Dev2. Developmental course in algebra for students with unusually weak backgrounds. A maximum of 8 credit hours of developmental courses may be applied for graduation. Meets no other college requirement. No credit to student who has passed higher-level mathematics course Available on regional campuses.

See General Education Requirements in the Graduation Requirements—University Wide section for quantitative skills requirements.

#### 109 Consumer Mathematics (4) (1M)

Prereq: 101 or 102 or placement level 1. (formerly 151) Applications of elementary mathematics to day-to-day problems. Special emphasis on consumer topics such as compound interest, mortgages, and installment buying. Scientific calculator required. Does not apply to arts and sciences requirements. No credit to those with credit for course above 150.

#### 113 Algebra (5) (1M)

Prereq: 101 or 102 or placement level 1. Topics in algebra including functions, linear equations and systems, polynomials, rational and radical expressions, quadratic equations, exponential and logarithmic functions, and inequalities. Graphing calculators are employed. No credit to those with credit for 117 or 263A.

#### 115 Pre-Calculus (5) (1M)

Prereq: 113 or placement level 2. Graphs, inverses, and operations of functions. Study of polynomial, rational, exponential, logarithmic, and trigonometric functions. Additional topics from trigonometry and analytic geometry. Recommended only for students intending to enroll in the 263 calculus sequence.

#### 117 Elementary Applied Mathematics (4) (1M)

Prereq: placement level 1. Topics from intermediate algebra such as functions and graphs, systems of linear equations, 3x3 determinants, factoring, quadratic equations and inequalities, exponents and radicals, and logarithms. Available by correspondence and on some regional campuses. Students cannot earn credit for both this course and 113.

#### 118 Elementary Applied Mathematics (4) (1M)

Prereq: 117. Topics from trigonometry and analytic geometry including trigonometric functions and their graphs, vectors and oblique triangles, trigonometric identities,  $\pm$ -operator, straight lines, conic sections, and translation of axes. Available by

correspondence and on some regional campuses. Students cannot earn credit for both 118 and any of: 115, 116, or 130.

#### 120 Elementary Topics in Mathematics (4) (1M)

Prereq: placement level 1. 120-121-122 is a sequence for majors in elementary education and related fields. Emphasis of 120 is on number systems and related properties. 121 and 122 focus on topics related to elementary curriculum including geometry, algebra, statistics, and probability. Satisfies Tier I requirement for elementary education majors only. Does not apply to Arts and Sciences natural science requirements.

#### 121 Elementary Topics in Mathematics (4) (1M)

Prereq: 120. Continuation of 120. Does not apply to Arts and Sciences natural science requirements.

#### 122 Elementary Topics in Mathematics (3) (1M)

Prereq: 121. Continuation of 120-121. Does not apply to Arts and Sciences natural science requirements.

#### 147 Introductory Game Theory (4) (1M)

Prereq: 101 or placement level 1. The course introduces mathematical models for situations of conflict, whether actual or recreational. Topics include matrix representation of games, two-person and n-person games, zero and non-zero-sum games, Nash equilibria, cooperation and the prisoner's dilemma. Application to topics such as warfare, business decisions, football, environmental policy, evolution, voting, and poker will be considered.

#### 150 Finite Mathematics (4) (1M)

Prereq: 113 or placement level 2. (formerly 250A) Set theory; logic; vectors and matrices; linear programming.

#### 163A Introduction to Calculus (4) (2N)

Prereq: 113 or placement level 2. Presents a survey of basic concepts of calculus. For students who want an introduction to calculus, but do not need the depth of 263A-B-C. Note: Students cannot earn credit for both 163A and either of 263A or 266A.

#### 163B Introduction to Calculus (3) (2N)

Prereq: 163A. Continuation of 163A. Note: Students cannot earn credit for both 163B and either of 263B or 266B.

#### 211 Elementary Linear Algebra (4) (1M)

Prereq: 113 or placement level 2. Solutions to linear systems, matrices and matrix algebra, determinants, n-dimensional real vector spaces and subspaces, bases and dimension, linear mappings, matrices of linear mappings, eigenvalues and eigenvectors, diagonalization. Emphasis is on techniques and computational skills. No credit to students who have completed 410 or 411.

#### 250 Introduction to Probability and Statistics I (4) (1M)

Prereq: 113 or placement level 2. (formerly 250B) Organization of data, central tendency and dispersion, probability, concept of random variables, binomial and normal probability distributions. No credit for 250 if already credit for 450A, PSY 120, PSY 121, PSY 221, ISE 304, or ISE 305.

#### 251 Introduction to Probability and Statistics II (4) (1M)

Prereq: 250. Estimation, testing hypotheses, linear regression and correlation, and analysis of variance. Students in business administration should enroll in more specialized QBA 201. No credit for 251 if already credit for 450B, QBA 201, PSY 121, PSY 221, or ISE 306.

NOTE: It is strongly recommended that students who earn less than a 2.0 in any course in the 263 calculus sequence retake that course before progressing in the sequence.

#### 263A Calculus I (4) (2N)

Prereq: 115 or placement level 3. Limits and differentiation, including trigonometric functions. Applications of the derivative. NOTE: Students cannot earn credit for both 263A and either of 163A or 266A.

#### 263B Calculus II (4) (2N)

Prereq: 263A or 266A. Integration, logarithmic, exponential, and other transcendental functions; indeterminate forms, improper integrals, and techniques of integration. NOTE: Students cannot earn credit for both 263B and either 163B or 266B.

**263C Calculus III (4) (2N)**

Prereq: 263B or 266B. Continuation of 263A-B. Parametric equations, polar coordinates, infinite series, and vectors.

**263D Calculus IV (4)**

Prereq: 263C. Continuation of 263A-B-C. Multi-dimensional topics, partial differentiation, multiple integrals.

**266A Calculus with Applications to Biology I (4) (2N)**

Prereq: 115 or placement level 3. Introduction to dynamical systems, limits, and derivatives in the context of biological applications. Students cannot earn credit for both 266A and either of 163A or 263A.

**266B Calculus with Applications to Biology II (4) (2N)**

Prereq: 266A. Continuation of 266A. Integral calculus and the analysis of differential equations in the context of biological applications. No credit for 266B if already credit for 163B or 263B.

**297T Mathematics Tutorial (1–15)**

(fall) Special program for students of unusual ability.

**298T Mathematics Tutorial (1–15)**

Prereq: 297T. (winter) Continuation of 297T. See 297T for description.

**299T Mathematics Tutorial (1–15)**

Prereq: 298T. (spring) Continuation of 297T and 298T. See 297T for description.

**300 History of Mathematics (4)**

Prereq: math major, jr or sr. Survey of main lines of mathematical development in terms of contributions made by great mathematicians.

NOTE: The following four courses (306, 307, 314, 330) are primarily intended for prospective mathematics majors to introduce them to mathematical theory at an elementary level.

**306 Foundations of Mathematics I (4)**

Prereq: 263A or 163B. An introduction to mathematical thinking and formal proofs. Topics include sets, relations, and functions.

**307 Introduction to Number Theory (4)**

Prereq: 306. Investigation of properties of natural numbers. Topics include mathematical induction, prime factorization, Euclidean algorithm, Diophantine equations, congruences, and divisibility.

**308 Discrete Mathematics (4)**

Prereq: 211 or 263A. Introduction to discrete mathematical structures and their application. The main topics are induction, recursion, graph theory, and combinatorics. Applications include discrete and network optimization, discrete probability, game theory and voting systems.

**314 Elementary Abstract Algebra (4)**

Prereq: 306. Mappings, relations, definitions, and examples of groups, groups of rotations, cyclic groups, Lagrange's Theorem, fields, polynomials over fields.

**320L Teaching of Mathematics in Secondary School (5)**

Prereq: 211, 330B, and jr. or sr. Orientation to professional mathematics education and topics related to teaching of mathematics on secondary school level. Not counted toward math major or minor or in Arts and Sciences 200L.

**330A Foundations of Geometry (4)**

Prereq: 306. Introduction to axiomatic mathematics via 2 finite geometries and variety of interpretive models. Develops plane Euclidean and non-Euclidean geometries in rigorous fashion from axiomatic approach.

**330B Foundations of Geometry (4)**

Prereq: 330A. Continuation of 330A. See 330A for description.

**333 Elementary Projective Geometry (4)**

Prereq: 330. Topics in projective geometry.

**340 Differential Equations (4)**

Prereq: 263C. Ordinary differential equations and related topics.

**343 Mathematical Modeling (4)**

Prereq: 250, and 163B or 263B. Construction and analysis of mathematical models and their use in investigation of physical, chemical, geological, social, and environmental problems. Models

which use only elementary mathematical concepts stressed.

**344 Numerical Methods for Civil and Mechanical Engineers (4)**

Prereq: 340 and CE 220. The fundamentals of numerical methods for civil engineering students. Topics include: approximation and interpolation, numerical solution to equations, numerical differentiation and integration, numerical solutions to differential equations, solutions of systems of equations, and finding eigenvalues. The topics will be posed in a setting of problems intended for civil engineering students using MATLAB.

**360 Intermediate Analysis (4)**

Prereq: 263D and 306, or perm. Rigorous study of limits, continuity, and differentiability of functions of 1 real variable.

**397T Mathematics Tutorial (1–15)**

(fall) Special program for students of unusual ability.

**398T Mathematics Tutorial (1–15)**

Prereq: 397T. (winter) Continuation of 397T. See 397T for description.

**399T Mathematics Tutorial (1–15)**

Prereq: 398T. (spring) Continuation of 397T and 398T. See 397T for description.

**406 Foundations of Mathematics II (4)**

Prereq: 306. Introductory topics in set theory and axiomatic development of real number system.

**407 Number Theory (4)**

Prereq: 307, 263C. Topics in number theory.

**410 Matrix Theory (4)**

Prereq: 263D. Matrix algebra, determinants, solutions of linear systems, eigenvalues and eigenvectors, matrix functions and applications to differential equations, Jordan canonical form, inner products diagonalization and generalized inverses. Intended primarily for students interested in applied mathematics, engineering, and sciences.

**411 Linear Algebra (4)**

Prereq: 306. (fall) Vector spaces and linear transformations, characteristic values, quadratic forms, dual spaces, normal forms, and Jordan canonical form.

**412 Introduction to Algebraic Coding Theory (4)**

Prereq: 211 or 410. Encoding and decoding for error correction. Linear codes over finite fields and syndrome decoding. Cyclic codes, Hamming codes, BCH and Reed-Solomon codes.

**413 Introduction to Modern Algebra (4)**

Prereq: 314 or 411. (winter) Groups, permutation groups, subgroups, normal subgroups, quotient groups. Conjugate classes and class equation formula and its applications to p-groups. Fundamental theorem on homomorphisms.

**413B Introduction to Modern Algebra (4)**

Prereq: 413A. (spring) Fundamental theorem on finite abelian groups and its consequences. Cauchy theorem and first Sylow theorem. Polynomial rings. UFD and Euclidean domains. Maximal ideals. Algebraic extensions and splitting fields. Fundamental theorem of Galois theory.

**439 Topics in Geometry (1–5, max 10)**

Prereq: perm. When demand is sufficient, course in some phase of geometry will be offered under this number.

**440 Vector Analysis (4)**

Prereq: 263D. Vector algebra and its applications. Vector calculus and space curves. Scalar and vector fields, gradient, divergence, curl, and Laplacian. Line and surface integrals. Divergence theorem. Stoke's theorem, and Green's theorem.

**441 Fourier Analysis and Partial Differential Equations (4)**

Prereq: 340 and 263D. Representation of functions as sums of infinite series of trigonometric functions, Bessel functions, Legendre polynomials, or other sets of orthogonal functions. Use of such representations for solution of partial differential equations dealing with vibrations, heat flow, and other physical problems.

**442 Theory of Linear and Nonlinear Programming (4)**

Prereq: 211 or 410, and 263D; computer programming experience is desirable. Minimization

of functions subject to equality and inequality constraints, Kuhn-Tucker theorem, algorithms for function minimization, such as steepest descent and conjugate gradient and penalty function methods. (Not a course in computer programming.)

**443 Mathematical Modeling and Optimization (4)**

Prereq: 263D, 340, 211 or 410. Investigation of differential equation and/or discrete optimization models of physical, social, biological phenomena and large economic systems by qualitative analysis. Optimal criteria incorporated to convert models to optimal control problems. Pontriagin's maximal principle used to find analytic solutions. Numerical solutions to optimal control problems also treated. Discrete optimization includes topics from linear and integer programming, network algorithms and their analysis.

**444 Introduction to Numerical Analysis (4)**

Prereq: 263D, 340, and any CS course numbered 200 or above. Polynomial interpolation and approximation; numerical integration and differentiation; numerical solution to differential equations; numerical methods for matrix inversion, determination of eigenvalues, and solutions of systems of equations.

**445 Advanced Numerical Methods (4)**

Prereq: 441, 444. (winter) Numerical methods for solutions of ordinary and partial differential equations (credit for only 1 of 445 or ET 445).

**446 Numerical Linear Algebra (4)**

Prereq: 410 and any CS course numbered 200 or above. Floating point arithmetic, numerical solution of systems of linear equations using Gaussian elimination and its variants, numerical techniques for eigenvalues, error analysis, and implementation of algorithms on computer.

**448 Introduction to Waves and Wavelets with Applications (4)**

Prereq: 410 or 411, and 441 or 444, and CS 210 or 220. An elementary introduction to Fourier and wavelet analysis and its application in engineering, such as data analysis and signal and image analysis. Focus on understanding basic mathematical concepts and methodology, developing related numerical algorithms and their implementation. Prior experience with computer software and computer algebra systems, such as the matlab toolbox and basic computer programming skills are required.

**449 Advanced Differential Equations (4)**

Prereq: 340, and 410 or 411. Introduction to theory of ordinary differential equations with special attention to oscillation, plane autonomous systems, Liapunov theory, and quadratic functionals.

**450A Theory of Statistics (4)**

Prereq: 263D. (fall) Topics in the 450A-B-C sequence include probability distributions of one and several random variables, conditional probability and independence, expectation and variance, moment generating functions, the central limit theorem, sampling theory, estimation, testing hypotheses, regression and correlation, and analysis of variance.

**450B Theory of Statistics (4)**

Prereq: 450A. (winter) Continuation of 450A. See 450A for description.

**450C Theory of Statistics (4)**

Prereq: 450B. (spring) Continuation of 450A-B. See 450A for description.

**451 Stochastic Processes (4)**

Prereq: 450B. Markov chains, Poisson process, birth and death process, queuing, and related topics.

**452 Statistical Computing (4)**

Prereq: 450B. Introduction to computational statistics; Monte Carlo methods, bootstrap, data partitioning methods, EM algorithm, probability density estimation, Markov Chain Monte Carlo methods.

**455 Basic Principles of Actuarial Science (4)**

Prereq: 450A. Basic concepts of risk theory and utility theory, applied calculus and probability models for the analysis of claims, frequency and severity of distributions, loss distributions, premium determination, insurance with deductible, reinsurance and self-insurance.

**456 Theory of Interest and Life Contingencies (4)**

Prereq: 450A. Theory of interest and contingent payment models. Mathematical models for the actuarial present value of a future set of payments contingent on some random event(s); life insurance, life annuities, benefit reserves.

**460A Advanced Calculus (4)**

Prereq: 360. (fall) Critical treatment of functions of one or several variables. Topics in the 460A-B-C sequence include the basic topological features of Euclidean spaces, a careful study of limits and continuity, Riemann-Stieltjes integration, uniform convergence, and multidimensional differentiation and integration.

**460B Advanced Calculus (4)**

Prereq: 460A. (winter) Continuation of 460A. See 460A for description.

**460C Advanced Calculus (4)**

Prereq: 460B. (spring) Continuation of 460A-B. See 460A for description.

**470 Complex Variables (4)**

Prereq: 263D. Analytic and harmonic functions. Cauchy integral and residue theorems, contour integration, Taylor and Laurent expansions, conformality, and linear transformations with applications.

**480A Elementary Point Set Topology (4)**

Prereq: 360. (winter) Topology of Euclidean spaces and general metric spaces.

**480B Elementary Point Set Topology (4)**

Prereq: 480A. (spring) Introduction to general topological spaces.

**486 Introduction to Bioinformatics (4)**

Prereq: grade of 2.0 or better in 263B or 266B. Major topics and techniques in bioinformatics, including homology searches, sequence alignment, gene finding, phylogenetic trees. The course combines biological, computational, and statistical approaches to the extraction of information from large sets of biomolecular data.

**490 Selected Topics in Mathematics (1-5)**

Prereq: perm of instructor and chair. When demand is sufficient, course in some phase of mathematics will be offered under this number. (May be repeated for credit.)

**491 Studies in Mathematics (1-15)**

Prereq: 6 hrs of 400-level courses, sr or jr in Honors Tutorial College, or perm of chair and instructor. Selected topics in mathematics studied under guidance of instructor particularly interested in field. (May be repeated for credit.)

**497T Mathematics Tutorial (1-15)**

(fall) Special program for students of unusual ability.

**498T Mathematics Tutorial (1-15)**

Prereq: 497T. (winter) Continuation of 497T. See 497T for description.

**499T Mathematics Tutorial (1-15)**

Prereq: 498T. (spring) Continuation of 497T and 498T. See 497T for description.

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## Medical Assisting Technology (MAT)

The following courses for the A.A.S. in medical assisting technology are available only on the Lancaster campus:

**101 Introduction to Medical Assisting (2)**

Introduction to the career of medical assisting. Roles and responsibilities of a medical assistant; overview of the health care profession; and the safety, liability, professional, and interpersonal relationships necessary in the medical field.

**140 Medical Terminology for the Medical Assistant (3)**

Understanding and usage of medical terms used in the allied-health field. Emphasis is on the spelling of, definition of, and creation of medical terms through the understanding of prefixes, suffixes, and root words. Terminology learned through body system knowledge. Credit cannot be earned for both 140 and OTEC 141M.

**150 Medical Transcription and the Medical Assistant (3)**

Prereq: 140 or concurrent, OTEC 121. Application of medical transcription rules to typical medical documents, including those used in both hospitals and ambulatory-care settings. Covers proper use and correct spelling of medical terminology, as well as increased production of documents.

**170 Administrative Medical Assisting (4)**

Prereq: 101, OTEC 121. Introduction to the medical office and current administrative practices. Topics include confidentiality and the daily practices of the medical assistant.

**201 Clinical Techniques (4)**

Prereq: 101, BIOS 103. Introduction to medical laboratory theory and practice in preparation for physical examination. Patient and exam room preparation, vital sign tests, taking health histories, aseptic techniques, infection control, and universal precautions are studied. 3 lec, 2 lab.

**202 Clinical Techniques II (4)**

Prereq: 201. Theory and practice in minor hematology, laboratory tests, urinalysis, administering medications, pharmacology, and venipuncture. Covers documentation and government regulations, and the processes of sterilization, quality control, and vision and blood testing. 2 lec, 4 lab.

**203 Clinical Techniques III (4)**

Prereq: 202. Theory and practice in assisting with minor office surgery, office procedures, and diagnostic procedures. Operation, maintenance, and inventory control of equipment and supplies required of a medical assistant. 2 lec, 4 lab.

**210 Law and Ethics for Medical Assisting (2)**

Prereq: 101. Introduction to the law and ethics as they apply to allied health fields. Topics include practicing in a medical office, professional liability and medical malpractice, medical records and informed consent, medical ethics, documentation and reporting, and licenses and accreditation.

**230 Insurance Billing and Coding for the Medical Assistant (4)**

Prereq: 140, 170. Theory and application of skills necessary to process insurance forms in the health care setting. Covers major nationwide medical insurance programs and extensive study and use of ICD-9-CM and CPT coding.

**250 Computerized Office Procedures for the Medical Assistant (4)**

Prereq: 170, 230. Theory and application of skills necessary to manage administrative duties in a medical office. Emphasis is on computer applications and tasks such as scheduling and billing.

**290 Special Topics (1-5, max 5)**

Prereq: 101. Special topics current and relevant to the medical assisting field.

**291 Independent Study (1-5, max 5)**

Prereq: 101. Independent study of a particular topic pertinent to medical assisting under the direction of a faculty member.

**295 Externship (3)**

Prereq: 203. Practical experience as a medical assistant in a supervised unpaid clinical experience. Student performs administrative and clinical procedures and develops professional attitudes. Student works 21 hours per week each week during the quarter enrolled.

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## Medical Technology

See Preparation for Clinical Laboratory Science under Arts and Sciences or Biological Sciences under Courses of Instruction.

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## Microbiology

See Biological Sciences.

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## Military Science (MSC)

**Army ROTC**

**Regional Campus Students** can participate in the two-year program by attending advanced courses at the Athens campus.

**101 Fundamental Military Leadership Concepts (1)**

Prereq: fr or soph. (fall) Broad overview of the Army as an institution of the U.S. government. Introductory course to the Army's Reserve Officer Training Corps (ROTC) and overview of the curriculum that can lead to a commission as a second lieutenant in the U.S. Army. Increases self-confidence through activities in basic drill, physical fitness, rappelling, and firing the M-16 rifle. Teaches fundamental concepts of leadership in a profession in both classroom and outdoor laboratory environment. 1 hr and a required 2-hr lab, 110L, plus optional participation in a 1-hr session for physical fitness and one weekend exercise.

**102 Fundamental Military Concepts and Basic Leadership I (1)**

Prereq: fr or soph. (winter) Provides an understanding of selected basic soldier skills that are essential to the Army's ability to win on the modern battlefield. Develops communication and leadership skills to improve individual performance and group interaction. Reinforces self-confidence through participation in basic drill, physical fitness, and a water survival exercise. Provides hands-on training of basic individual skills both in the classroom and outdoor laboratory environment. 1 hr and a required 2-hr lab, 110L, plus optional participation in a 1-hr session for physical fitness and a weekend exercise.

**103 Basic Military Leadership II (1)**

Prereq: fr or soph. (spring) Continuation of selected basic soldier skills that are essential to the Army's ability to win on the modern battlefield. Develops skills to navigate on the ground by understanding map reading. Reinforces self-confidence through participation in basic drill, physical fitness, rappelling, and a land navigation exercise. Provides hands-on training of basic individual skills both in the classroom and outdoor laboratory environment. 1 hr and a required 2-hr lab, 110L, plus optional participation in a 1-hr session for physical fitness and a weekend exercise.

**110L Leadership Laboratory (1)**

Prereq: Concurrent with 101, 102, 103. Provides additional skills and hands-on experiences and allows the student to practice what was taught in the classroom. Offers insight into a military organization and builds self-confidence and team-building skills.

**201 Advanced Military Leadership (2)**

Prereq: fr or soph. (fall) Continues basic skills by applying teamwork as a small group. Teaches the fundamentals of land navigation and basic life-saving techniques. Enhances survival awareness through lectures, films, and participation. Includes a one-day orienteering course, which occurs on a weekend during the quarter. 2-hr-a-week course with a required Leadership Lab, MSC 201L, one day a week. The course also includes rappelling and rifle familiarization, which may not occur during inclement weather.

**202 Military Leadership, Tactics, and Officership (2)**

Prereq: fr or soph. (winter) Uses ethics-based leadership skills to develop individual abilities and contribute to the building of effective teams of people. Develop skills in oral presentations and military correspondence. Presents the fundamentals of military leadership and their application to team development. Teaches the basic duties of the commissioned and noncommissioned officer. This course is a 2-hr-a-week course with a required Leadership Lab, MSC 202L, once a week.

**203A Military Tactics and Officership II (2)**

Prereq: fr or soph. (spring) Introduction to individual and team development of military tactics in small unit operations. Includes use of radio communications, movement techniques, issue and operation order, security, and troop leading procedures. Teaches techniques for training others as an aspect of continued leadership development. This course is a 2-hr-a-week course with a required Leadership Lab, MSC 203L, one day a week. Includes rappelling and rifle familiarization, which may not occur during inclement weather.

**210L Leadership Laboratory (1)**

Prereq: Concurrent with 201, 202, 203. Provides additional skills and hands-on experiences and allows the student to practice what was taught in the classroom. Offers insight into a military organization and builds self-confidence and team-building skills.

**230 Leaders Training Course (4)**

28-day summer off-campus training program that qualifies students for direct entry to advanced ROTC course. Transportation to and from camp, uniforms, meals, and housing paid for by Army.

**301 Small Unit Leadership (3)**

Prereq: perm. Study of basic leadership principles, the Army decision-making process, small unit tactics, and required individual skills. Course includes intrinsic leadership practical exercises. A 2-hr-a-week lab, three 1-hr sessions of physical training a week, and a required weekend field training exercise are required parts of the course.

**302 Small Unit Leadership and Operations (3)**

Prereq: 301. Continuation of 301 developing from squad to platoon level organization and tactics, as well as an increased complexity in leadership positions. Labs, physical training, and a field training exercise are required as part of the course.

**303 Small Unit Operations (3)**

Prereq: 302. Continuation of PLT level operations with an increased emphasis on the dynamics of leadership to include the ethical decision-making process and the laws of war. The course also makes final preparations for the student to attend their summer training. Labs, physical training, and a field training exercise are required as part of the course.

**310A Advanced Leadership Laboratory (1)**

Prereq: enrollment in 301. (fall) Designed to allow you to actually practice what is taught in the classroom by using a hands-on approach.

**310B Advanced Leadership Laboratory (1)**

Prereq: enrollment in 302. Continuation of 310A. See 310A for description.

**310C Advanced Leadership Laboratory (1)**

Prereq: enrollment in 303. (spring) Continuation of 310A-B. See 310A for description.

**330 National Advanced Leadership Camp (4)**

Prereq: 303. 32-day field training session conducted at Ft. Lewis, Washington. Exposure to barracks life and daily leadership activities of future commissioned officers in field and garrison. Transportation to and from camp, uniforms, meals, and lodging paid for by the Army.

**401 Military Leadership, Management, and Ethics (3)**

Prereq: 303. Provides opportunity to plan, conduct, and evaluate activities of the Army cadet organization. Assess organizational cohesion and develop strategies to improve it. Develop confidence in skills to lead people, manage resources, and plan and execute complex small-organization operations. Teaches application of various Army policies and programs. Two hours and a required Leadership Lab, MSC 410, plus participation in three 1-hr sessions for personal and organizational physical fitness.

**402 Military Leadership, Management, Ethics, and Law (3)**

Prereq: 401. Continuation of 401. Increased emphasis on critical thinking skills and ability to quickly identify and resolve complex leadership issues.

**403 Transition from Cadet to Lieutenant (3)**

Prereq: 402. (spring) U.S. in contemporary world scene. Includes study of other major factors in the world arena.

**410A Advanced Leadership Laboratory (1)**

Prereq: enrollment in 401. (fall) Allows you to plan and conduct training events such as drill and ceremony and land navigation.

**410B Advanced Leadership Laboratory (1)**

Prereq: enrollment in 402. (winter) See 410A for description.

**410C Advanced Leadership Laboratory (1)**

Prereq: enrollment in 403. (spring) See 410A for description.

**490 Special Problems (1–5, max 15)**

Prereq: perm. Provides continuing military education on individual basis. Provides advanced and specialized training depending upon needs of individual and department.

**Music (MUS)****Applied Music**

Fee for private instruction registration for all applied music (piano, voice, organ, strings, woodwind, brass, percussion) is \$100 (MUS 340-358).

Fees for class voice, piano, guitar, and all instrumental methods courses are \$25. (MUS 141A, 142A, 143A, 147A, 148A, 149A, 165A, 166A, 182, 261 A-B, and 263 A-K)

Fees for music computer courses are \$40 (MUS 178 and 178A)

Note: A description of the proficiency requirements for applied music may be obtained from the School of Music.

**090 Performance Laboratory (0)**

Required of all undergraduate music majors.

**141 Class Piano (2)**

Prereq: music major.

**141A Class Piano (2)**

Prereq: nonmusic major. *Fisher.*

**142 Class Piano (2)**

Prereq: 141, music major. Continuation of 141.

**142A Class Piano (2)**

Prereq: 141A, nonmusic major. *Fisher.* Continuation of 141A.

**143 Class Piano (2)**

Prereq: perm, 142, music major. Continuation of 141 and 142.

**143A Class Piano (2)**

Prereq: 142A, nonmusic major. *Fisher.* Continuation of 142A.

**147 Class Voice (2)**

Prereq: music major. For students enrolling in beginning voice.

**147A Class Voice (2)**

Prereq: nonmusic major. Beginning instruction in voice for nonmusic majors.

**148 Class Voice (2)**

Prereq: 147. Continuation of 147.

**148A Class Voice (2)**

Prereq: 147A, nonmusic major. (winter) Continuation of 147A.

**149 Class Voice (2)**

Prereq: 148. Continuation of 148.

**149A Class Voice (2)**

Prereq: 148A, nonmusic major. (spring) Continuation of 148A.

**165 Class Folk Guitar (2)**

Prereq: music major. Introduction to guitar fundamentals including the playing of chords and melodies using varied systems of notation, basic strumming and finger-picking techniques, and tuning. Skill development in the use of guitar in vocal accompaniment and early solo work.

**165A Class Folk Guitar (2)**

Prereq: nonmusic major. See 165 for further description.

**166 Class Folk Guitar (2)**

Prereq: 165. Continuation of 165.

**166A Class Folk Guitar (2)**

Prereq: 165A. Continuation of 165A.

**241 Class Piano (2)**

Prereq: music major, 143 with minimum grade of C, or perm.

**242 Class Piano (2)**

Prereq: 241, music major. Continuation of 241.

**243 Class Piano (2)**

Prereq: 242, music major. Continuation of 241 and 242.

**244D Communiiversity Band (2)**

Prereq: audition. A wide variety of music literature, including marches, overtures, and musicals is studied and performed both on and off campus under both a permanent and guest conductor.

**251A Marching Band (2)**

Prereq: audition. *R. Suk.*

**251B Wind Ensemble (2)**

Prereq: audition. *J. Climer.*

**251C University Band (1)**

Prereq: audition. *R. Suk.*

**251D Varsity Band (1)**

Prereq: audition. *R. Suk.*

**251E Symphonic Band (1)**

Prereq: audition. *R. Suk.*

**252A Symphony Orchestra (2)**

Prereq: audition. *S. Haung.*

**252B Chamber Orchestra (1)**

Prereq: audition.

**253A University Singers (2)**

Prereq: audition. *P. Jarjisian.*

**253B Choral Union (1)**

Prereq: audition. *P. Jarjisian.*

**253C Opera Theater (1–4)**

Prereq: audition.

**253D The Singing Men of Ohio (1)**

Prereq: audition. *Staff.*

**253E Women's Chorale (1)**

Prereq: audition. *P. Jarjisian*

**254A Chamber Music, Strings (1)**

Prereq: strings. Participation in playing of standard string chamber literature.

**254B Chamber Music, Woodwinds (1)**

Participation in playing of standard woodwind chamber literature.

**254C Chamber Music, Brass (1)**

Participation in playing of standard brass chamber literature.

**254D Chamber Music, Percussion (1)**

Participation in playing of standard percussion chamber literature.

**254E Chamber Music, Contemporary (1)**

New music ensemble. Participation in performing contemporary chamber music for various ensembles of instruments and voices.

**254F Chamber Music, Piano (1)**

Participation in playing of standard piano chamber literature.

**255A Jazz Ensemble (1)**

Prereq: audition. *M. James.*

**255B Percussion Ensemble (1)**

*R. Braun.*

**255C Trombone Choir (1)**

*C. Hayes.*

**340 Voice (1–4)**

Prereq: music major. *P. Pease.*

**341 Piano (1–4)**

Prereq: music major. *G. Berenson, S. Henry, R. Syracuse.*

**343 Organ (1–4)**

*P. Barte.*

**343A Harpsichord (1–4)**

*P. Barte.*

**344 Violin (1–4)**

*M. Bagley*

**345 Viola (1–4)**

*Staff*

**346 Violoncello (1–4)**

*M. Carrera*

**347 Double Bass (1–4)**

*D. Messina.*

**348 Flute (1–4)**

*A. Sincoff.*

**349 Oboe (1–4)**

*D. Conaty.*

**350 Bassoon (1–4)**

*Harley.*

**351 Clarinet (1–4)**

*R. Rischin.*

**352 Saxophone (1–4)**

*M. James.*

**353 Trumpet (1–4)**

*J. Schlabach.*

**354 Horn (1–4)**

*S. Smith.*

- 355 Euphonium (1–4)**  
J. Smith.
- 356 Trombone (1–4)**  
C. Hayes.
- 357 Tuba (1–4)**  
J. Smith.
- 358 Percussion (1–4)**  
R. Braun
- 359 Class Piano (2)**  
Prereq: 243 with minimum grade of C, and 103.
- 360 Class Piano (2)**  
Prereq: 359.
- 361 Class Piano (2)**  
Prereq: 360.
- 370 Practicum in Music (1–2, max 12)**  
Provides practical experiences such as supervised private and/or small group teaching, seminars in instrument repair, small touring ensembles, and pit orchestra performance. May be repeated.
- 372 Advanced Functional Skills (2)**  
Prereq: jr in piano. (fall) Instruction to provide greater facility in handling basic functional keyboard skills. Emphasis on transferring these skills to actual situations encountered as music educators and/or music therapists.
- 375A English Diction for Singers (1)**  
Stresses using vocal repertoire, correct pronunciation for singing.
- 375B Italian Diction for Singers (1)**  
Prereq: ITAL 111. See 375A for description.
- 375C German Diction for Singers (1)**  
Prereq: GER 111. See 375A for description.
- 375D French Diction for Singers (1)**  
Prereq: FRN 111. See 375A for description.
- 377A Jazz Improvisation I (2)**  
Prereq: C or better in 103. *Bastin*. Learning and applying through improvisation the Ionian, Dorian, and Mixolydian modes, the ii-V7-I progression, and culminating with a final project utilizing the song form.
- 377B Jazz improvisation II (2)**  
Prereq: C or better in 377A. *Bastin*. Learning and applying through improvisation the whole tone, diminished and blues scales, the Aeolian and Locatone modes, the ii-V7-I progression, and culminating with a final project utilizing blues form.
- 379 Performance Preparation (2)**  
Assistance in developing strategies for preparing physically and psychologically to achieve maximum potential in musical performance.
- 450 Accompanying (1, max 3)**  
Basic problems in accompanying vocalists and instrumentalists—rehearsal techniques, ensemble, pedaling, balance, etc. May be repeated.
- 455 Basic Conducting (3)**  
Prereq: 203, 205. *P. Jarjisian, J. Climer, and Huang*. Basic beat patterns, technique of baton, and use of left hand. Experience in conducting choral and small instrumental ensembles in works suitable for school groups.
- 456A Instrumental Conducting (3)**  
Prereq: 205, 455. *J. Climer*. Experience in conducting from full score; includes band and orchestral works suitable for high school groups.
- 456B Choral Conducting (3)**  
Prereq: 205, 455. *P. Jarjisian*. Specialized conducting techniques for choral groups, including experience in conducting works suitable for high school and college groups.
- 457A Solo Repertoire of String Instruments (1)**  
Prereq: 323. Survey of student's major performance instrument literature.
- 457B Solo Repertoire of Woodwind Instruments (1)**  
Prereq: 323. See 457A for description.
- 457C Solo Repertoire of Brass Instruments (1)**  
Prereq: 323. See 457A for description.
- 457D Solo Repertoire of Vocal Music (1)**  
Prereq: 323. See 457A for description.
- 457F Solo Repertoire of Percussion Instruments (1)**  
Prereq: 323. See 457A for description.
- 457G Keyboard Repertoire I (2)**  
Prereq: 125. A comprehensive study of the keyboard repertoire from 1600 through 1750, including major works of Baroque composers.
- 457K Keyboard Repertoire II (2)**  
Prereq: 125. A comprehensive study of the piano repertoire from 1750 through 1900, including major works of classical and romantic composers.
- 457L Keyboard Repertoire III (2)**  
Prereq: 125. Twentieth century piano repertoire beginning with works from the Impressionistic Period and including major works of composers to the present.
- 458A String Instrument Pedagogy (2)**  
Teaching techniques and use of selected materials for various levels of ability. Includes practical experience in teaching string instruments.
- 458B Woodwind Instrument Pedagogy (2)**  
See 458A for description—woodwind instruments.
- 458C Brass Instrument Pedagogy (2)**  
See 458A for description—brass instruments.
- 458D Vocal Pedagogy (2)**  
See 458A for description—voice.
- 458E Class Piano Pedagogy (2)**  
*M. Stewart*. Practical teaching techniques unique to class piano instruction, particularly in electronic lab. Examination of useful materials for various levels of ability. Includes some experience in classroom teaching.
- 458F Percussion Instruments Pedagogy (2)**  
See 458A for description—percussion instruments.
- 458G Piano Pedagogy (2)**  
(fall) *G. Berenson*. Provides creative teaching strategies for piano teacher. Teaching philosophies, objectives, and procedures discussed and applied to group and private piano instruction. Includes teaching techniques for working with students of all ages and levels.
- 458H Piano Pedagogy (2)**  
(winter) *G. Berenson*. Continuation of 458G. See 458G for description.
- 458I Piano Pedagogy (2)**  
(spring) *G. Berenson*. Continuation of 458G and 458H. See 458G for description.
- 459A Instrumental Conducting II (3)**  
Prereq: 456A. *J. Climer*.
- 459B Choral Conducting II (3)**  
Prereq: 456B. *P. Jarjisian*.
- 495\* Jr. Recital (1)**  
Prereq: Music major; permission of applied instructor AND junior classification in applied music. Public performance of repertoire representative of a variety of historical and stylistic periods. \*Tier III equivalent course, but both 495 and 496 must be taken to receive Tier III equivalent credit.
- 496\* Sr. Recital (3)**  
Prereq: Music 495 AND senior level classification in applied music. Public performance of repertoire representative of a variety of historical and stylistic periods. \*Tier III equivalent course, but both 495 and 496 must be taken to receive Tier III equivalent credit.
- 497 Recital (1–2)**
- Music Education**
- 160 Music Fundamentals (3)**  
For elementary education majors only. Reviews the fundamentals of music with piano applications.
- 161 Music for the Classroom Teacher (3)**  
Prereq: 160 with minimum grade of C. Methods of teaching elementary music. For elementary education majors only.
- 163 Introduction to Music Education (2)**  
Introduction of major components of music teaching in elementary and secondary schools.
- 261A Upper Strings Methods and Materials (2)**  
Prereq: soph in music education/music therapy. Instruction in upper stringed instruments with emphasis on teaching techniques, methods, and materials.
- 261B Lower Strings Methods and Materials (2)**  
Prereq: soph in music education/music therapy. Instruction in lower stringed instruments with emphasis on teaching techniques, methods, and materials.
- 262 Music in Early Childhood (3)**  
Methods and materials for aesthetic development of preschool children. Exploration of reading readiness and vocal, rhythmic, listening activities.
- 263A Percussion Methods and Materials (2)**  
Prereq: soph in music education/music therapy. Instruction in percussion instruments with emphasis on teaching techniques, methods, and materials.
- 263E Trumpet Methods and Materials (2)**  
Prereq: soph in music education/music therapy. Instruction in trumpet with emphasis on teaching techniques, methods, and materials.
- 263F Horn/Trombone Methods and Materials (2)**  
Prereq: soph in music education/music therapy. Instruction in horn and trombone with emphasis on teaching techniques, methods, and materials.
- 263G Euphonium/Tuba Methods and Materials (2)**  
Prereq: soph in music education/music therapy. Instruction in euphonium and tuba with emphasis on teaching techniques, methods, and materials.
- 263H Flute/Saxophone Methods and Materials (2)**  
Prereq: soph in music education/music therapy. Instruction in flute and saxophone with emphasis on teaching techniques, methods, and materials.
- 263I Clarinet Methods and Materials (2)**  
Prereq: soph in music education/music therapy. Instruction in clarinet with emphasis on teaching techniques, methods, and materials.
- 263K Double Reed Methods and Materials (2)**  
Prereq: soph in music education/music therapy. Instruction in double reed instruments with emphasis on teaching techniques, methods, and materials.
- 362 Teaching Instrumental Music in the Elementary and Middle School (3)**  
Prereq: jr standing in music education. A study of procedures for planning, implementing, administering, and evaluating instrumental music programs in elementary and middle schools. Also included is a survey of appropriate teaching materials and application of current technology.
- 362L Teaching Instrumental Music in the Elementary/Middle School—Laboratory Band (1, max 4)**  
Prereq: jr standing in music education. Prepares the prospective instrumental music educator for competence and adequacy in executing an ensemble music rehearsal at the elementary/middle school level. Items covered include conducting, personnel, and score preparation.
- 363 Secondary School Instrumental Methods and Materials (3)**  
Prereq: jr standing in music education. Literature and rehearsal techniques for secondary school bands and orchestras, including administration of the high school instrumental music program.
- 364 Secondary School Vocal Techniques and Materials (3)**  
Prereq: jr standing in music education. (spring) Literature and rehearsal techniques for high school choral groups.
- 366 Teaching of Music in the Elementary Grades (3)**  
Prereq: jr standing in music education or music therapy. (fall) Materials and methods for elementary music. For music majors only.
- 366A Introduction to Orff Schulwerk (2)**  
Introduction to music, materials, instruments, and pedagogy used in Orff teaching.
- 366B Early Childhood Music Education (3)**  
Prereq: jr standing in music education. Introduces music majors to the methods and materials for teaching music to preschool children.
- 464 Marching Band Techniques (2)**  
Prereq: jr standing in music education. (spring) Techniques for preparation of high school and college marching band performance.

**465 Jazz Ensemble Methods (2)**

Prereq: jr standing in music education. Methods of organizing and implementing jazz ensemble programs in secondary schools. Includes survey of appropriate materials.

**468 General Music in the Junior High School (3)**

Prereq: jr standing in music education. (winter) Materials and methods; listening program; changing voice.

**Music History and Literature****120 Exploring Musical Styles (3) (2H)**

Prereq: nonmusic major. Development of listening skills for understanding elements of musical style in historical perspective and significance of music as fine art.

**124 Language of Rock Music (3)**

Examines birth, growth, and development of rock music through its acceptance as art form with significant influence on youth culture and resulting social implications.

**125 Introduction to Music History and Literature (4) (2H)**

(fall) Survey of musical forms, styles, performance media (including jazz and non-Western) from Gregorian era to present.

**150 Viewing Performance (2)**

Integrates classroom and student life activities at the University by combining the OU Artist Series and major productions of the Schools of Comparative Arts, Music, Dance, and Theater with a seminar course dealing with characteristics of the medium and artistic concerns. A two-hour seminar precedes and follows each of the performances. No credit to those with credit for CA 150, DANC 150, or THAR 150.

**321 History and Literature of Music (3)**

Prereq: 103, 125. History of music with survey of musical literature to 1600. No credit to those with credit for CA 321.

**322 History and Literature of Music (3)**

Prereq: 103, 125. History of music with survey of musical literature, 1600–1750. No credit to those with credit for CA 322.

**323 History and Literature of Music (3)**

Prereq: 322. History of music with survey of musical literature, 1750 to present. No credit to those with credit for CA 323.

**421A Literature of Choral Music (3)****421B Literature of Piano Music (3)****421C Literature of Chamber Music (3)****421D Literature of Orchestral Music (3)****421E Literature of Organ Music (3)****421F Literature of Opera (3)****421G Literature of Band Music (3)****427 Folk Music in the United States (3)**

Introduction to selected types of folk music in U.S.

**428 Jazz History (3)**

Study of jazz styles to 1970.

**Independent Studies in Music****414 Senior Thesis (2)**

Prereq: sr. Preparation of senior project.

**418A\* Sr. Thesis I (2)**

Prereq: Sr.; BM5105, BM5114 or BM5116; no credit if 414. Independent research in music theory or music history, or major creative work in music composition, working toward a senior-level thesis or composition final project. \*Tier III equivalent course, but both 418A and 418B must be taken to receive Tier III equivalent credit.

**418B\* Sr. Thesis II (2)**

Prereq: Music 418A; no credit if 414. Independent research in music theory or music history, or major creative work in music composition, completing a Senior thesis. Continuing MUS 418A. \*Tier III equivalent course, but both 418A and 418B must be taken to receive Tier III equivalent credit.

**498 Independent Project (1–6)****499 Independent Readings in Music (1–12)****Music Theory and Composition****100 Introduction to Music Theory (3) (2H)**

Prereq: nonmusic major. Introduction to staff, pitch, and rhythmic notation, chords, pop music notation, etc.

**101 Music Theory I (3)**

Prereq: music theory placement exam. Melodic, harmonic, and rhythmic principles of music and its notation. 5 days per wk.

**101A Music Theory (3)**

Prereq: nonmusic major, ability to read music. Melodic, harmonic, and rhythmic principles of music and its notation.

**102 Music Theory II (3)**

Prereq: C or better in 101. Continuation of 101. See 101 for description.

**102A Music Theory (3)**

Prereq: 101A, nonmusic major. Continuation of 101A. See 101A for description.

**103 Music Theory III (3)**

Prereq: C or better in 102. Continuation of 101 and 102. See 101 for description.

**104 Dictation and Sight Singing I (1)**

Prereq: music theory placement exam. Acquisition of skills in the aural perception and reading of melodic, harmonic, and rhythmic musical structure. Should be taken concurrently with 101.

**105 Dictation and Sight Singing II (1)**

Prereq: 104 with a minimum grade of C. Should be taken concurrently with 102. See 104 for description.

**106 Dictation and Sight Singing III (1)**

Prereq: 105 with a minimum grade of C. Should be taken concurrently with 103. See 104 for description.

**178 Computer Skills for Musicians (2)**

Provides a basic overview of computer technology and terminology and introduces various software tools specifically for musicians.

**178A Computer Skills for Musicians, Nonmajors (2)**

See 178 for description.

**179 Technology for Music Educators (2)**

Prereq: 178. Provides the prospective music educator with technology skills, knowledge of software, and methods for using technology in the music classroom.

**201 Music Theory IV (3)**

Prereq: 103 with a minimum grade of C. Harmonic and contrapuntal practices of 18th, 19th, and 20th centuries, including structural analysis of small and large forms.

**202 Music Theory V (3)**

Prereq: 201 with a minimum grade of C. Continuation of 201. See 201 for description.

**203 Music Theory VI (3)**

Prereq: 202 with a minimum grade of C. Continuation of 201 and 202. See 201 for description.

**204 Dictation and Sight Singing IV (2)**

Prereq: 106 with a minimum grade of C. Should be taken concurrently with 201.

**205 Dictation and Sight Singing V (2)**

Prereq: 204 with a minimum grade of C. Continuation of 204.

**206 Dictation and Sight Singing VI (2)**

Prereq: 205 with a minimum grade of C. Continuation of 204 and 205. See 204 for description.

**304 Instrumentation (3)**

Prereq: 203. (fall) Technical characteristics of instruments of band and orchestra. Arranging for small ensembles.

**305 Orchestration I (3)**

Prereq: 203, 304. (winter) Scoring for instrumental ensembles with emphasis on intra- and cross-choir scoring. Writing of transcriptions and score reductions.

**306 Orchestration II (3)**

Prereq: 305. (spring) Continuation of 305. See 305 for description.

**307 Choral Arranging (3)**

Prereq: 203. Arranging for standard vocal ensembles with and without accompaniment.

**308 Composition, Nonmajor (2)**

Prereq: Non-composition major; 203, 206. Introduction to 20th-century compositional techniques. Writing smaller compositions.

**309 Composition, Major (2)**

Prereq: Composition major. See 308 for description.

**402A Styles I (3)**

Prereq: 203 with minimum grade of C. (offered alternate years) Analysis of Medieval and Renaissance music.

**402B Styles II (3)**

Prereq: 203 with minimum grade of C. (offered alternate years) Analysis of 19th century music.

**402C Styles III (3)**

Prereq: 203 with minimum grade of C. (offered alternate years) Analysis of 20th-century music.

**405A Jazz Theory I (3)**

Prereq: 203, 206, keyboard skills as determined by instructor. Harmonic vocabulary, notational systems, and chord progressions in traditional jazz.

**405B Jazz Theory II (3)**

Prereq: 405A. Continuation of 405A. See 405A for description.

**407A Counterpoint I (3)**

Prereq: 203, 205. (offered alternate years) Analysis and composition in sacred style of the 16th century.

**407B Counterpoint II (3)**

Prereq: 203, 205. (offered alternate years) Analysis and composition of 18th-century contrapuntal forms.

**407C Counterpoint III (3)**

Prereq: 203, 205. (offered alternate years) Continuation of 407B.

**410B Composition (2)**

Prereq: 312, electronic comp. only. Original composition in electronic medium for tape alone, live electronic instruments, or conventional instruments with electronic tape.

**413 Introduction to Electronic Music (3)**

Prereq: 102A, 141A, or music major. History, theories, techniques, and aesthetics of electronic music.

**414 Senior Thesis (2)**

Prereq: sr. Preparation of senior project.

**415 Microcomputer Applications in Music Production (3)**

Prereq: 413. Using various MIDI and digital audio applications running on microcomputers to produce a series of small projects in electronic music.

**416 Project in Electronic Music (3)**

Prereq: 415. Creating a major project using MIDI synthesizers and software and/or digital audio.

**416A Advanced Projects in Electronic Music (3)**

Prereq: approved project proposal, 416. A project proposal must be submitted to and approved by the instructor prior to enrolling in this course. An electronic music composition will be produced for public performance.

**416B Advanced Recording Studio Techniques (4)**

Prereq: 416. Instruction in operating a 16-track recording studio. Topics including advanced mixing techniques, sound processing, mixing, and SMPTE time code synchronization on a 16-track recorder.

**417 Advanced Digital Synthesis (4)**

Prereq: 415. Concepts of digital sound synthesis primarily using the Synclavier system. Topics include advanced FM synthesis, additive synthesis, sampling, sequencing, and SMPTE time code synchronization on the Synclavier.

**417A Advanced Digital Synthesis and Multi-track Projects (4)**

Prereq: approved project proposal, 416B, 417. A project proposal must be submitted to and approved by the instructor prior to enrolling in this course. Supervision and guidance for working on creative electronic projects using the Synclavier and the 16-track recording studio.

**Music Therapy****180 Music Therapy Practicum I (1–2)**

Prereq: fr in music therapy. Selected field experience in approved clinical facilities; field evaluation of student.

**181 Introduction to Music Therapy (3)**

(fall) Introduction to clinical practice of music therapy; clinical observation.

**182 Recreational Music Instruments and Materials (3)**

Prereq: music major. Guitar and nonsymphonic classroom instruments; special instrumental methods for disabled.

**280 Music Therapy Practicum II (1-3)**

Prereq: soph in music therapy. Selected field experiences in approved clinical facilities; field evaluation of student.

**281 Observation, Evaluation, and Research in Music Therapy (3)**

Prereq: soph. (spring) Observation and evaluation skill development through classroom videotape, and field data collection and analysis; tests and evaluations; research methods and their application to clinical investigations. 2 lec, 1 lab.

**282 Music Therapy Activities for Classroom and Clinic (3)**

Prereq: soph. (winter) Development of skills in treatment planning and application including activity design and analysis for problems in all clinical areas.

**380 Music Therapy Practicum III (1-3)**

Prereq: jr standing in music therapy. Selected field experiences in approved clinical facilities; field evaluation of student.

**381 Psychological Foundations of Music (3)**

Prereq: jr standing in music therapy/music education. Basic study of acoustics, ear and hearing, and psycho-socio-physiological process involved in music behavior.

**382 Psychological Foundations of Music II (3)**

Prereq: 381. Theory of music therapy, survey of current literature and trends in music therapy; influence of music on behavior, physiology, emotions, learning, and work performance; experimental research required.

**480 Music Therapy Practicum IV (1-3)**

Prereq: sr in music therapy. Selected field experience in approved clinical facilities; field evaluation of student.

**481 Music Therapy Principles and Techniques I (3)**

Prereq: jr standing in music therapy. Problems of exceptional children and therapist strategies and techniques for remediation; terminology; treatment settings.

**482 Music Therapy Principles and Techniques II (3)**

Prereq: 481. Problems in psychiatry and rehabilitation; therapist strategies and techniques for remediation; terminology; treatment settings; traditional and current psycho-therapeutic and behavioral approaches.

**483 Music Therapy Principles and Techniques III (3)**

Prereq: 482. Program development process for selected clinical populations; administration of music therapy program.

**489 Clinical Training in Music Therapy (1)**

Prereq: 483. Six months as full-time music therapy intern at AMTA-approved clinical training facility following completion of sr yr.

## Nursing

**Associate's Degree Program (NURS)**

The following courses for the A.A.S. in nursing are available on the Chillicothe, Southern, and Zanesville campuses:

**110 Foundations of Nursing I (4)**

Prereq: admission to AD nursing program. Designed to introduce the beginning nursing student to the concepts that form the foundation of associate degree nursing. Students are introduced to nursing as a caring profession. Opportunities will be provided for the student, as a beginning nursing care provider, to develop skills in critical thinking through the application of the nursing process and in the implementation of selected nursing techniques. Emphasis will be placed on the three roles of the AD nurse as they relate to the nursing care of the adult.

**111 Foundations of Nursing II (4)**

Prereq: C or better in 110, 115, 120, 130; BIOS 130; CHEM 121. Continuation of 110 with increased emphasis on integrating the concepts of caring, critical thinking, and the three roles of the AD nurse. The nursing process continues to be the framework for assisting clients throughout the lifespan.

**115 Communication in Nursing (1)**

Prereq: admission to AD nursing program. Explores the concepts of effective communication and the application of the teaching/learning process with clients across the lifespan. A caring therapeutic nurse/patient relationship depends upon effective communication. As a teacher, the nurse addresses the nursing roles of communicator, direct patient care provider, and manager of clients with safety, physiological, psychosocial, or health promotion/learning needs. Critical thinking skills and effective communication are required by the nurse to successfully meet the learning needs of the client.

**120 Assessment of the Middle and Older Adult (2)**

Prereq: admission to AD nursing program. Focuses on the assessment of environmental safety, level of physiological and psychosocial integrity, and health promotion and maintenance practices of middle to older adult. Nursing process is introduced as a cornerstone of professional nursing practice. Nursing assessment is emphasized through the direct care role. The components of assessment include a deliberate and systematic collection, validation, and patterns of identification of data from a variety of sources. Critical thinking and caring are essential for effective nursing assessment. Assessment activities will occur in simulated settings.

**121 Assessment of the Neonate through Young Adult (2)**

Prereq: C or better in 110, 115, 120, 130; BIOS 130; CHEM 121. Focuses on the assessment of environmental safety, level of physiological and psychosocial integrity, and health promotion and maintenance practices of the neonate through younger adult. Nursing process is introduced as a cornerstone of professional nursing practice. Nursing assessment is emphasized through the direct care role. The components of assessment include a deliberate and systematic collection, validation, and patterns of identification of data from a variety of sources. Critical thinking and caring are essential for effective nursing assessment. Assessment activities will occur in simulated settings.

**130 Pharmacology in Nursing I (1)**

Prereq: admission to AD nursing program. Assists the student in making sound nursing judgments associated with medication therapy. Basic principles of drug administration are taught to enable the student to think critically and to administer medications in a safe and caring manner. Emphasis is on nursing implications of common drug therapy to adult populations. The student will learn to administer non-parenteral medication with concern for safety, precision, and attention to important physiological factors. Simulations will occur in the campus laboratory.

**131 Pharmacology in Nursing II (2)**

Prereq: C or better in 110, 115, 120, 130; BIOS 130; CHEM 121. Builds on 130. Students will learn the injectable methods of drug administration. Emphasis is on nursing implications of drug administration across the life span. Simulations will occur in the campus laboratory.

**132 Pharmacology in Nursing III (2)**

Prereq: C or better in 111, 121, 131; BIOS 131; HCFN 128. Enables the student to make sound nursing judgments associated with medication therapy across the lifespan. Principles of initiating and delivering medications by the IV route are taught. Advanced topics to be covered are care of clients with central lines, administration of blood products, TPN, and chemotherapy. Simulations will occur in the campus laboratory.

**210 Health Alterations I (7)**

Prereq: C or better in 111, 121, 131; BIOS 131; HCFN 128. Focuses on nursing care related to acute and chronic alterations in the physiological needs of nutrition, fluid balance, elimination, oxygenation transport, and regulation. The student will learn to function as a member within the discipline of nursing, as a provider of care, and as a manager of care for adults. Emphasis will be placed on establishing a caring relationship between the client, family, and nurse. The nurse will use critical thinking skills to promote health and well-being.

**211 Health Alterations II (7)**

Prereq: C or better in 210, 132; BIOS 201. Focuses on nursing care related to acute and chronic alterations in the physiological needs of oxygenation perfusion and ventilation. The

student will continue to develop as a member within the discipline of nursing, and as a provider and manager of care for adults. Emphasis will be placed on establishing a caring relationship between the client, family, and nurse. The nurse will use critical thinking skills to promote health and well-being.

**212 Health Alterations III (7)**

Prereq: C or better in 211; PSY 101. Focuses on nursing care related to acute and chronic alterations in the physiological needs of movement, coordination, cognition, sensory function, and immunity. The student will refine responsibilities while functioning as a member of the discipline, provider, and manager of care for adults. Emphasis will be placed on establishing a caring relationship between the client, family, and nurse. The nurse will use critical thinking skills to promote health and well-being.

**220 Maternal, Newborn, and Women's Health Alterations (5)**

Prereq: C or better in 111, 121, 131; BIOS 131; HCFN 128. Emphasizes the use of critical thinking and caring as a foundation for the AD nurse in delivering care to the childbearing client and to women with alterations in reproductive health. The student will function as a member within the discipline of nursing as a provider/manager of care and promoter of health and well-being.

**230 Mental Health Alterations (5)**

Prereq: C or better in 111, 121, 131; BIOS 131; HCFN 128. Focuses on the roles of the AD nurse as a member within the discipline of nursing and as a provider and manager of care for children, adolescents, and adults with mental and emotional problems. Emphasis will be placed on establishing a therapeutic relationship to assist individuals and families to achieve adaptation, recovery, and growth by working through alterations in psychosocial needs. The nurse will use critical thinking skills to promote mental health.

**240 Child and Adolescent Health Alterations (5)**

Prereq: C or better in 111, 121, 131; BIOS 131; HCFN 128. Focuses on the roles of the AD nurse as a member within the discipline of nursing, provider of care, and manager of care in providing care for infants, children, and adolescents with health alterations. Emphasis will be placed on establishing a caring relationship between the child, family, and nurse. The nurse will use collaboration, communication, and critical thinking skills to promote health and well-being.

**260 Transition to Nursing Practice (10)**

Prereq: C or better in 212, 220, 230, 240; SOC 101. Focuses on facilitating a transition to entry-level nursing. This capstone course further refines critical thinking, caring of self and others, and the roles of the nurse in providing care across the lifespan. Topics such as client care environment, managing client, managing others, and professional development will be included.

**290A-Z Current Issues in Nursing (1-5, max 15)**

Prereq: perm. Series of elective short courses for nursing students at OU-Zanesville. RNs and allied health professionals from the local area may enroll.

**291A-D Current Issues in Nursing (1-5, max 5)**

Prereq: perm. See 290A-Z for description.

**Baccalaureate Program for RNs (NRSE)****300 Transitions in Nursing (5)**

Prereq: B.S.N. major or school nurse. Focus on issues related to transition from technical to professional nursing. History and development of nursing as a profession; professional practice and the nursing process; nursing theories; nursing research; general systems theory; role theory; Ohio University's School of Nursing's philosophy and conceptual framework. 5 lec.

**303 Health and Safety in Early Childhood (3)**

Prereq: HCCF 160 or PSY 273. Health and safety knowledge and skills needed in working with children under the age of five years. Includes communicable disease, first aid, environmental safety, and child abuse content. 3 lec.

**305 Introduction to School Nursing (4)**

Prereq: 300. Historical overview of school nursing in the U.S., plus current responsibilities of school nurse in implementing a school health program. 4 lec.

**310 Health Appraisal I (4)**

Prereq: 300 or concurrent. Focus on developing cephalocaudal nursing assessment skills and the ability to draw valid inferences from the data collected. 3 lec, 3 lab.

**315 Pain Management for Nursing (4)**

Prereq: licensed RN; CS 120 or equivalent. Assists RNs in moving from historical perspective of pain management to current concepts underlying the pathophysiology and treatment of pain. Pharmacological and nonpharmacological approaches to acute and chronic pain management addressed from holistic client and family perspectives. This course may be taught on the Internet. 4 lec.

**325 Health Interventions in Nursing (5)**

Prereq: 300 or concurrent. Concept of health and its relationship to nursing intervention strategies. Theoretical and practical aspects of teaching/learning and counseling emphasized. 5 lec.

**330 Family Nursing (4)**

Prereq: 300 or concurrent. Focus on nursing care of family system throughout the life cycle. Synthesis of family theory and application of the nursing process to families. 3 lec., 3 lab.

**335 Ethical and Legal Issues in Nursing (4)**

Prereq: 300 or concurrent. Analysis of the relationships between ethics and the law with close attention given to the issues and decisions that impact professional nursing practice. 4 lec.

**340 Community Health Nursing (4)**

Prereq: 300 or concurrent. Nursing care of aggregate systems within a community. Topics include community health nursing roles and basic concepts of community health. Implementation of population focused care through the nursing process, collaboration, and interdisciplinary skills. 3 lec., 3 lab.

**405 Research: Critique and Methodology (4)**

Prereq: 300 or concurrent; PSY 120 or 221 or MATH 251 or QBA 201 Research in nursing practice. Topics include interrelationships among theory, practice and research; theory and science in nursing; nursing practice models; steps in the research process; critiquing of current research; development of a research proposal. 4 lec.

**415 Restorative Nursing (4)**

Prereq: 405 or concurrent. Nursing care of individuals, families, and groups experiencing alterations in health and the responses to those changes throughout the life cycle. Concepts addressed include loss, pain, crisis, coping, quality of life. Development of clinical learning objectives and strategies for NRSE 425. 4 lec.

**416 Management Issues in Nursing (4)**

Prereq: 300 or concurrent. Nursing management through use of a systems approach. Leadership models and behavior at various organizational levels discussed. Critical management strategies introduced. 4 lec.

**425 Clinical Applications in Nursing (4)**

Prereq: 415. Examination of selected nursing situations and independent clinical professional nursing roles. 3 lec, 3 lab.

**445 Strategic Planning in Nursing Care (4)**

Prereq: 405, 416, 425. Application of strategic planning concepts to professional nursing practice. Topics addressed are assessment of organizational system and implications for change; accountability and quality assurance; power and influence. Active involvement as change agent and implementation of planned change project. Clinical experience in a variety of settings. 3 lec, 3 lab.

**455 Excellence in Nursing (4)**

Prereq: sr., 40 hrs of NRSE 300/400 courses. Synthesis course designed to enhance student's knowledge of professional nursing. Past and present issues and trends in nursing examined. Emerging trends and futuristic nursing studied. Content will vary depending upon student needs and interests as well as events occurring in discipline of nursing. *Approved Tier III equivalent.* 4 lec.

**461A School Nurse Seminar: Early Childhood (1)**

Prereq: 305; 461C concurrent; school nurse. Health care issues in school settings that impact children between the ages of 3 and 8 years (preschool-third grade). 1 lec.

**461C School Nurse Practice: Early Childhood (4)**

Prereq: licensed RN, malpractice insurance. Practice as a school nurse in school setting with children between the ages of 3 and 8 years. Learner will work with a preceptor who is a certified/licensed school nurse. 12 lab.

**462A School Nurse Seminar: Middle Childhood (1)**

Prereq: 305; 462C concurrent; school nurse. Health care issues in school settings that impact children between the ages of 9 and 13 years (grades 4-8). 1 lec.

**462C School Nurse Practice: Middle Childhood (4)**

Prereq: 305; 462C concurrent; school nurse. malpractice insurance. Practice as a school nurse in elementary and middle schools (grades 4-8). Learner will work with a preceptor who is a certified/licensed school nurse. 12 lab.

**463A School Nurse Seminar: Late Childhood (1)**

Prereq: 305; 463C concurrent; school nurse. Health care issues in school settings that impact children between the ages of 14 and 20 years (grades 9-12 and early college). 1 lec.

**463C School Nurse Practice: Late Childhood (4)**

Prereq: licensed RN, malpractice insurance. Practice as a school nurse in secondary and post-secondary schools. Learner will work with a preceptor who is a certified/licensed school nurse. 12 lab.

**490 Independent Study (1-5)**

Prereq: perm. Student chooses a topic of specific interest with the assistance of a faculty member.

**491 Current Topics (1-5)**

Prereq: Ohio RN licensure.

**492A-Z Special Topics (1-4)**

Prereq: perm. Intensive study of selected topics in nursing when significant professional issues arise.

**Office Technology (OTEC)**

The following courses for the A.A.B. in office technology are available on the Chillicothe, Lancaster, and Southern campuses. Some elective courses are unique to a particular campus. Under University College, see the Colleges and Curricula section for the list of required courses.

**121 Keyboarding I (4)**

Introduction to touch keyboarding system with emphasis on correct techniques, mastery of keyboard, typical business correspondence, tabulation, and reports.

**122 Keyboarding II (4)**

Prereq: 121. Emphasis on formatting problems and keyboarding speed building. Production work involves tabulations, reports, correspondence, and business forms.

**123 Keyboarding III (4)**

Prereq: 122. Advanced keyboarding problems, techniques, knowledge, and skills involved in production keyboarding work using computers. Designed to acquire maximum in production.

**130 Business Communication I (3-4)**

Basic English grammar review with emphasis on word usage, sentence structure, paragraph development, capitalization, and punctuation for more effective business writing.

**141L Legal Terminology (2)**

Prereq: 121. Intensive course of study in legal terminology and vocabulary including definitions, usage, derivations, and spelling.

**141M Medical Terminology (2)**

Prereq: 121. Structure of medical words and terms. Emphasis on spelling and defining commonly used prefixes, suffixes, root words, and their combining forms.

**171 Administrative Procedures I (3-4)**

Prereq: 121. Enhancement of skills as they relate to the world of work.

**171L Legal Support and Procedures I (3)**

Prereq: 121. Enhancement of skills as they relate to the world of legal work.

**171M Medical Support and Procedures I (3)**

Prereq: 121. Enhancement of skills as they relate to the world of medical work.

**172 Administrative Procedures II (4)**

Prereq: 171. Continuation of 171. Instruction in current office practices as well as critical thinking and problem solving skills, including business protocol, professional development, telecommunications, and experiences in general office work expectations.

**172L Legal Support and Procedures II (3)**

Prereq: 171L. Emphasizes machine transcription utilizing complete production units concerning legal correspondence and documents.

**172M Medical Support and Procedures II (3)**

Prereq: 171M. Emphasizes machine transcription utilizing complete production units concerning medical correspondence and documents, such as case histories, articles, and hospital reports.

**189 Independent Study (1-5, max 10)**

Prereq: perm. Studies in selected subject areas related to office technology field. May be repeated up to 5 credit hours.

**200 Desktop Publishing I (3)**

Prereq: 121 recommended. Develops skill in using desktop publishing software. Covers publishing information, graphic design basics, and will prepare students to produce newsletters, brochures, catalogs, etc., that are of professional quality.

**201 Desktop Publishing II (3)**

Prereq: 200. Continuation of 200. Advanced applications using desktop publishing.

**221 Dictation/Transcription (4)**

Prereq: 121 and 130. Development of machine transcription skills for taped dictation.

**225 Communication Processing I (3-4)**

Prereq: 121 or concurrent. Introduction to professional communication processing. Emphasis will vary by campus.

**226 Communication Processing II (3-4)**

Prereq: 225. Continuation of 225. Emphasizes advanced applications.

**227 Communication Processing III (3)**

Prereq: 226. Designed to introduce students to a variety of software—including integrated hardware and software evaluation processes—using the microcomputer.

**230 Business Communication II (4)**

Prereq: 130 or ENG 150 or higher placement. Extensive and detailed practice in written communication for business, industry, and professions. Involves composition of letters, memoranda, and reports.

**231 Business Calculations (4)**

Prereq: MATH 101, 102, or higher placement. Practical mathematical calculations typical of a business situation. Concentration on problem-solving techniques necessary to perform calculations accurately and efficiently.

**248 Administration of Record Systems (3)**

Controlling cost and improving effectiveness of records and information management within business enterprises. Includes control of record creation, maintenance, and disposition through systems analysis; forms management, protection methods.

**258 Stress Management for Office Personnel (3)**

Involves recognition of stress, how to handle stress within yourself, how to assist office personnel in dealing with stress, and implications of time in its relationship to stress.

**267 Office Supervision (4)**

Prereq: 122, 172. Involves principles and practices of management of flow of information within enterprise. Includes basic management functions of planning, controlling, organizing, and coordinating as applied to office services, physical facilities, systems and procedures, work measurement and standards, and business information systems. Emphasis on matters of personnel.

**268 Information System Design (3)**

Effective use of management techniques and equipment in meeting informational needs of business and industry. How to design optional system utilizing feasibility studies, etc., and how to implement design.

**288 Information System Equipment Selection—Acquisition Seminar (2)**

Remodeling or designing new facilities, including space management, as well as source, cost, and justification for special equipment and furniture. Use of consultants and feasibility studies reviewed.

**290 Seminar (4)**

Prereq: perm. Special topics and problems encountered in field experience discussed. Opportunity to share ideas and experiences and to find possible answers to questions arising in actual working situations.

**291 Special Topics (1–5, max 10)**

Prereq: perm. Projects concerning office technology field explored on one-to-one basis with instructor.

**298 Practicum in W/P Supervision (2)**

Experiences in supervision of word/data processing labs or centers. Responsibilities include assisting W/P trainees, demonstrating equipment to classes/visitors, producing complex documents, designing forms, and learning/developing new systems.

**299 Internship (1–5, max 10)**

Prereq: 225 and perm. Practical field experience or in-class office simulation.

## Ohio Program of Intensive English (OPIE)

Credit hours listed for OPIE are not applicable to degree requirements. For English for nonnative speakers applicable to degree requirements, see ENG 150A, 151A in English under ENG 150, 151.

**21 Elementary Core Skills (12)**

Prereq: perm. 12-hour core component of a full-time (20 hours/week) course in English as a second language for students at the elementary level whose ultimate aim is academic study. Core Skills class focuses on basic grammar and communication skills. Writing sometimes included. Focus is on American English for effective communication both inside and outside the classroom.

**22 Elementary Listening/Speaking (4)**

Prereq: perm. This course is one component of full-time study of English as a second language for students at the elementary level whose ultimate aim is academic study. Four hours of classroom instruction are designed to provide students with instruction and practice in basic listening and speaking for everyday communication.

**23 Elementary Reading/Writing (4)**

Prereq: perm. This course is one component of full-time study of English as a second language for students at the elementary level whose ultimate aim is academic study. Four hours of classroom instruction are designed to provide students with instruction and practice in reading and vocabulary. Students build their reading skills by learning reading strategies and practicing with readings and exercises from the textbook. Students build their vocabulary by learning new words and learning to determine the meaning of words from context clues and word analysis. Students work to develop sentence-level writing skills and may begin practice writing simple paragraphs.

**26 Intermediate Core Skills (12)**

Prereq: perm. Twelve-hour core component of a full-time (20 hours/week) course in English as a second language for students aiming at academic study. Students at this level do not take academic courses. Paragraph level writing competency is developed as students expand grammatical knowledge and explore the process of writing. Instruction and practice includes an introduction to the three-paragraph essay.

**27 Intermediate Listening/Speaking (4)**

Prereq: perm. This course is one component of full-time study of English as a second language for students at the intermediate level whose ultimate aim is academic study. Four hours of classroom instruction are designed to provide students with instruction and practice in listening and speaking.

**28 Intermediate Reading/Vocabulary (4)**

Prereq: perm. This course is one component of full-time study of English as a second language for students at the intermediate level whose ultimate aim is academic study. Four hours of classroom instruction are designed to provide students with instruction and practice in reading

and vocabulary. Students build their reading skills by learning reading strategies and practicing with readings and exercises from the textbook. Students build their vocabulary by learning new words and learning to determine the meaning of words from context clues and word analysis. This course includes instruction and practice in using an English-only dictionary.

**31 Advanced Core Skills A (12)**

Prereq: perm. The Advanced CORE Skills A is a 12-hour CORE component of a full-time (20 hours/week) course of study in English as a second language for students preparing for academic study in an American university. Students incorporate understanding of grammatical structures, appropriate vocabulary, and organization into formally developed essays. More emphasis is placed on rhetorical modes and developing editing skills. Reading comprehension and lexical skill development is emphasized along with the improvement of reading rate. Students learn to synthesize the various skills and strategies to which they have been exposed. Listening and speaking skill activities rely more heavily on academic task simulations and university-level expectations.

**32 Advanced Core Skills B (12)**

Prereq: perm. The Advanced CORE Skills B is a 12-hour CORE component of a full-time (20 hours/week) course of study in English as a second language for students preparing for academic study in an American university. Students incorporate understanding of grammatical structures, appropriate vocabulary, and organization into formally developed essays. More emphasis is placed on rhetorical modes and developing editing skills. Reading comprehension and lexical skill development is emphasized along with the improvement of reading rate. Students learn to synthesize the various skills and strategies to which they have been exposed. Listening and speaking skill activities rely more heavily on academic task simulations and university-level expectations.

**33 Academic Listening/Note-taking/Speaking (4)**

Prereq: perm. This OPIE part-time level elective class aims to improve students' listening, note-taking, and speaking skills needed for successful academic work. Class time is spent on listening to academic mini-lectures, note-taking, discussions, and oral presentations.

**34 Academic Reading Skills (4)**

Prereq: perm. Provides students with both an understanding of the reading process and intensive practice in developing advanced-level reading strategies and skills. Designed to improve reading comprehension, reading speed, academic vocabulary, and awareness of text structures and rhetorical patterns.

**41 American Culture (4)**

Prereq: perm. A general overview of American culture to increase awareness and understanding of the cultural values of the United States and other cultures. Provides cross-cultural activities for small group and class discussions, and topics for oral presentations, research, and writing projects. Academic English skill-building through reading, writing, listening and speaking activities, vocabulary study, summarizing, research and oral reports, and group activities.

**42 Stories in the News (4)**

Prereq: perm. Students in this four-hour per week course will work to improve reading, writing, listening, and speaking skills while they study and report on a) current news stories and b) contemporary world issues.

**43 U.S. Cities: New York and Los Angeles (4)**

Prereq: perm. Through instruction in the history and cultural geography of two U.S. cities: New York City and Los Angeles, students improve their academic English language skills in grammar, reading, writing, listening, and speaking. Students practice language skills through discussion, oral presentations, written assignments, journal and essay writing, and completing reading logs. Students also learn and develop research skills by accessing and gathering information from a variety of sources.

**44 Native Americans of the U.S. (4)**

Prereq: perm. This course will help students further develop all English language skills while

learning about Native American history, culture, and current social and political issues. Students will gather information from a variety of sources including newspaper and magazine articles, the Internet, videotapes, guest speakers, and field trips; they will use this information in discussions, presentations and papers.

**46 Ecology and the Environment (4)**

Prereq: perm. This course will help students further develop all language skills as well as learn about local ecology and worldwide environmental issues. Students will gather information from a variety of sources including newspaper and magazine articles, the Internet, videotapes, guest speakers, and field trips; they will use this information in discussions, presentations and papers.

**47 English through Music (4)**

Prereq: perm. This course is one component of either full-time or part-time study of English as a second language for students whose ultimate aim is full-time academic study. Four hours of classroom instruction are designed to provide students with instruction and practice in listening/ speaking and reading while exploring American musical genres and American culture.

**51 Academic Core Skills 1 (8)**

Prereq: perm. Academic Core Skills 1 is a part-time integrated core in English as a Second Language for students who are also permitted to take one academic course. Eight hours of classroom instruction (two hours a day, four days a week) focus on the development of academic English language skills including reading and writing, study skills, and academic performance skills needed for success in an academic program in the U.S. Listening and speaking will also be addressed, and grammar will be addressed as needed.

**52 Americans at Work (4)**

Prereq: perm. This course focuses on improving students' academic reading, composition, and presentation skills by introducing them to work as a cultural phenomenon, to the history of work in the U.S., and to American cultural values and beliefs about work.

**53 Adventures in Mythology (4)**

Prereq: perm. Students in this course will work on improving their academic reading, writing, listening, and speaking skills through simulated academic study of mythology.

**54 Public Speaking (4)**

Prereq: perm. The Public Speaking Class develops speaking, listening, and presenting skills through discussion, demonstration, and extensive practice. This course is useful for both academic work and the workplace.

**56 Academic Core Skills 2 (8)**

Prereq: perm. Academic Core Skills 2 is a part-time level integrated core in English as a Second Language for students who are also permitted to take one or two academic courses simultaneously. Eight hours of classroom instruction (two hours a day, four days a week) are designed to provide students with high-level language skills development, with a specific focus on academic reading and writing skills, as well as academic performance and study skills. Students also work on academic listening and speaking skills.

**57 Pronunciation thru Current Events (4)**

Prereq: perm. This course will focus on improving the accuracy of students' speaking abilities. Students will have the opportunity to learn and practice the individual sounds, rhythm, intonation, and stress associated with spontaneous and planned spoken English. In addition, students will study current issues through the use of news-related listening materials and class discussions. These discussions of current events will provide the primary means for student improvement by enabling students to practice speaking in a relevant and engaging context.

**58 College Vocabulary (4)**

Prereq: perm. This course is designed to engage students in improving their vocabulary and using it accurately and fluently for academic purposes.

**61 Academic Core Skills 3 (8)**

Prereq: perm. This course is a part-time support course(s) in English as a Second Language for students who are also permitted to take two academic courses. Eight hours of classroom instruction (two hours a day, four days a week) are designed to provide students with high-level language skills development, with a specific focus

on academic reading and writing skills, as well as academic performance and study skills.

#### 62 Intercultural Communication (4)

Prereq: perm. This course focuses on improving students' academic reading, composition, and presentation skills by introducing them to the fundamental concepts of intercultural and interpersonal communication and the problems of intercultural conflict.

#### 64 Grammar (4)

Prereq: perm. Through this OPIE part-time level elective class, students will increase their ability to use a variety of grammatical patterns and structures to express original ideas, to edit written text, and to paraphrase, summarize, and synthesize information and ideas in order to perform extended academic tasks orally and in writing.

#### 65 Composition (4)

Prereq: perm. Through this OPIE part-time level elective class, students will increase their ability to write about familiar or prepared topics (up to three typed pages) with some precision and sufficient support. They will increase their ability to synthesize, summarize and paraphrase information from articles and academic texts. Students will perform various academic writing tasks such as writing persuasive essays and integrating paraphrased or summarized sources into a text. They will increase their ability to use a variety of grammatical patterns and structures to express original ideas in writing.

#### 66 Issues through Film (4)

Prereq: perm. Students in this five session per week course (ordinarily six hours of class) will work to improve speaking, reading, and writing as well as listening skills through a study of some of the traditional themes of USA cinema, and of movies that exemplify those themes.

#### 67 Information Gathering (4)

Prereq: perm. This OPIE part-time level elective class on Information Gathering (Techniques for Gathering and Evaluating Research Information) aims at providing international students with basic and, in some cases, advanced level information gathering and evaluation skills while at the same time improving their English language ability, particularly in the areas of reading, listening/ speaking, and classroom interaction skills.

#### 82 Oral Communication in Graduate Studies (3)

Prereq: perm. The goal of this course is to improve students' oral communication skills in English for success in the U.S. academic community. Students explore aspects of language, the U.S. academic culture, and strategies for effective discussion and presentation. Students will have the opportunity to learn and practice the individual sounds, rhythm, intonation, and stress associated with spontaneous and planned spoken English.

#### 99 Special Studies (1-15)

Prereq: perm. Individual or small group independent or tutorial study classes set up to meet the needs of students unable to participate in standard classes. Content and objectives taken from standard classes but adapted to the individual or small group independent or tutorial method of delivery.

## Operations (OPN)

#### 298 Internship (1)

Prereq: Perm. Internship experience that provides on-site exposure to general business operations and procedures. Intended for experiences following the freshman year.

#### 300 Principles of Operations (4)

Not open to Fr, Soph, or BBA students. Prereq: QBA 202 or PSY 221 or ECON 381 or COMS 301 or GEOG 271 or MATH 251. Examines how operations management provides a product or service with higher quality and at a lower cost than competition. Emphasis is on providing a conceptual understanding of the operations function, which includes: product/process design, facility location and layout, capacity planning, material and inventory management.

#### 310 Principles of Operations (4)

Prereq: QBA 201 or PSY 221 or ECON 381 or COMS 301 or GEOG 271 or MATH 251. More

than any other function, operations provides an organization with the capability to compete successfully in the global marketplace. With proper operations management, the firm can provide a product or service of higher quality in less time and at less cost than the competition. Emphasis on conceptual understanding of the operations function and includes the following topics: product/process selection and design, facility location and layout, capacity, material and inventory management, quality, etc.

#### 398 Internship (1-4)

Prereq: perm. Internship experience that provides opportunities to learn by participating in day-to-day activities of a business concern for at least four consecutive weeks. Intended for experience following the sophomore year.

#### 497 Independent Research (1-4)

Prereq: written proposal and perm. Independent research. Course content determined by professor and student.

#### 498 Internship (1-4)

Prereq: perm.

## Philosophy (PHIL)

#### 101 Fundamentals of Philosophy (4) (2H)

Survey of selected basic problems, concepts, and methods in philosophy.

#### 120 Principles of Reasoning (4) (1M)

Basic concepts of logic and techniques for judging validity of arguments introduced. System for symbolizing arguments and deriving conclusions from premises employed. Some of following topics also covered: informal fallacies in reasoning, syllogistic or Aristotelian logic, Venn diagrams, truth tables. Most sections are traditional lecture/test format, some taught in computer-assisted format, others use self-paced approach.

#### 130 Introduction to Ethics (4) (2H)

Discussion of classic and/or modern philosophical views of human values, ideals, and morality. Provides introductory survey of some main problems, concepts, and results of ethics including selected philosophers of past and present.

#### 216 Philosophy of Science Survey (3) (2H)

Nontechnical survey of types, testing, and credibility of hypotheses; methods of experimental inquiry; measurement; laws, theories and their role in explanation, concept formation.

#### 231 Philosophy of Sport (4)

Prereq: soph. Philosophical exploration into nature, meaning, purposes, values, and ideals of sport. Topics include goods and evils of competition, nature of sports experience, winning and losing, aesthetic and ethical dimensions of sport, ultimate athlete, scholastic athletics, philosophy of physical education, concept of sportsmanship, etc.

#### 232 Philosophy of Art (4) (2H)

Conceptual analysis of common assumptions, attitudes, theories, and ideas about arts, their criticism, and appreciation.

#### 235 Business Ethics (4)

Prereq: soph. Examination of moral reasoning as it pertains to institutions and practices of contemporary business. First half is devoted to basic ethical concepts and analysis of basis for acceptable ethical theory, investigation of role of government and society in their relationship to business, and value assumptions behind competing social and political systems business personnel encounter in today's global marketplace. Second half examines specific case studies.

#### 240 Social and Political Philosophy (4) (2H)

Introduction to major philosophical theories concerning nature of social and political communities including those offered by Plato, Aquinas, Hobbes, Locke, Mill, and Rawls. Consideration of some significant specialized problems in social and political theory including distributive justice, civil disobedience, liberty, punishment, etc.

#### 250 Philosophy of Mind (4)

Mind-body problem; concept of self; human-machine relation; problem of other minds.

#### 260 Philosophy of Religion (4) (2H)

Problems in the nature of religion, existence and the nature of God; problem of evil, immortality, and religious language.

#### 297T Philosophy Tutorial (1-10)

Prereq: Honors Tutorial College students only. (fall) 1st-yr tutorial studies in philosophy.

#### 298T Philosophy Tutorial (1-10)

Prereq: Honors Tutorial College students only. (winter) 1st-yr tutorial studies in philosophy.

#### 299T Philosophy Tutorial (1-10)

Prereq: Honors Tutorial College students only. (spring) 1st-yr tutorial studies in philosophy.

#### 310 History of Western Philosophy: Ancient (5) (2H)

Significant ideas of representative Greek and Roman philosophers.

#### 311 History of Western Philosophy: Medieval and Renaissance (5) (2H)

Augustine to Bruno and Campanella.

#### 312 History of Western Philosophy: Modern (5) (2H)

17th and 18th century European philosophy.

#### 314 19th Century European Philosophy (4) (2H)

Subjects selected from French, German, and British philosophers of 19th century.

#### 320 Symbolic Logic I (4)

Techniques of modern symbolic logic.

#### 330 Ethics (5)

Study focusing on specific philosopher, or one type of ethical or value theory.

#### 331 Moral Problems in Medicine (4)

Prereq: soph. Philosophical investigation of complex moral problems engendered by modern medicine, e.g., death with dignity, human experimentation, allocation of scarce medical resources, birth defects, killing or letting die, informed consent, etc. Basic philosophical concepts underlying these problems explored, including autonomy, coercion, normality, naturalness, rights, justice, responsibility, personhood, etc.

#### 332 Philosophy of Sex and Love (4)

Prereq: jr. Philosophical and evaluative investigation into subject of sexual love and Western morality. Topics include roles and relations between sexes, abortion, monogamy, sexual perversion, homosexuality, promiscuity, adultery, semantics of sex, etc.

#### 333 Philosophy of Literature (4)

Prereq: jr. Examines nature of fictional literature as differentiated from other types of writing. Explores philosophical ideas within specific works of fiction, concentrating on problems of translating philosophical content into literary form, interpretation, belief, truth, and artistic integrity.

#### 335 Environmental Ethics (4)

How should we value nature? What is important about it, and why? Is it important to us because caring for nature advances our interests, or because it is valuable in its own right? Do animals have special claims upon us? Should our primary concern be for individual organisms, or for species? This course will aim at thinking through some of the questions that surround the idea of valuing the environment in which we live, and understanding possible views as to the source and nature of that value.

#### 350 Philosophy of Culture (5)

Philosophical studies of humankind as culture-creating being.

#### 351 Philosophy of Language (4)

Prereq: 6 hrs in philosophy, including 120 or 320. Theories of meaning and reference and their philosophical significance, relations of meaning to verification and truth, and relationship between language and concepts.

#### 358 Existentialism (4)

Prereq: 9 hrs in philosophy. Existential thought from Kierkegaard to Camus stressing such themes as freedom, existence, despair, authenticity, alienation, death, and revolt against system.

#### 397T Philosophy Tutorial (1-10)

Prereq: Honors Tutorial college students only. (fall) 2nd-yr tutorial studies in philosophy.

#### 398T Philosophy Tutorial (1-10)

Prereq: Honors Tutorial college students only. (winter) 2nd-yr tutorial studies in philosophy.

#### 399T Philosophy Tutorial (1-10)

Prereq: Honors Tutorial college students only. (spring) 2nd-yr tutorial studies in philosophy.

**412 Philosophy of Biology (5)**

Prereq: BIOS 172 or PBIO 111. An analysis of such issues as the structure of theory in biology, whether biology differs from other sciences; whether species exist, natural selection, how taxonomy should be done, and whether biology raises any ethical issues.

**413 Philosophy and Freudian Analysis (5)**

Prereq: PSY 332 or 333. The philosophical and scientific presuppositions of Freudian psychology (including Freud's methodology) will be identified and subjected to rigorous philosophical analysis. Freud's early thought on hysteria, dreams, sexuality, and psychoanalysis will be emphasized. Recent attacks on the legitimacy of psychoanalysis will be examined. Alternative schemes for understanding human behavior will also be discussed.

**414 Analytic Philosophy (5)**

Prereq: 4 philosophy courses. Selected topics in contemporary Anglo-American philosophy.

**416 Philosophy of Science (4)**

Prereq: 3 philosophy courses. Selected problems in logic and methodology of sciences.

**417 Philosophy of Logic (4)**

Prereq: 320 or 502. Provides a survey of issues in the philosophy of logic. Topics include formal theories of truth, logical and semantical paradoxes, modal logic, conditionals, interpretations of quantifiers, and philosophical implications of Gödel's incompleteness theorems.

**418 Plato (5)**

Prereq: 4 philosophy courses, including 310.

**419 Aristotle (5)**

Prereq: 4 philosophy courses, including 310.

**420 Symbolic Logic II (4)**

Prereq: 320 or 502 or MATH 306 (or equiv.) or CS 300. Continuation of 320. Focuses on the completeness of first-order logic, Gödel's incompleteness theorems, axiomatic set theory, and Cantor's and Dedekind's theories of the infinite.

**425 Philosophical Problems in Quantum Physics (4)**

Prereq: 3 courses from PHIL, PHYS, CHEM, MATH, CS, or engineering. Interpretation and paradoxes of quantum theory. Topics include the problem of measurement, the Bohr-Einstein debates, Schrodinger's cat paradox, the Einstein-Podolsky-Rosen paradox, and Bell's Theorem and its implications.

**426 Philosophy of Space and Time (4)**

Prereq: 3 courses from PHIL, PHYS, CHEM, MATH, CS, or engineering. In addition to classical topics, issues in the philosophy of space and time that have been greatly influenced by the emergence of Einstein's theory of relativity will be discussed. Topics to be covered include the nature of geometry and its relation to the world, absolute vs. relational theories of space, time, and space-time, and Zeno's paradoxes of motion and extension. Contemporary and classical thinkers will be examined.

**427 Philosophy of Mathematics (4)**

Prereq: 3 courses from PHIL, PHYS, CHEM, MATH, CS, or engineering. An in-depth examination of a major work in the philosophy of mathematics or of a particular concept that plays a central role in mathematical philosophy, such as the concept of number, the concept of mathematical proof, and the concept of the mathematical infinite.

**428 Continental Rationalism (5)**

Prereq: 4 philosophy courses, including 312. (alternate yrs) Descartes, Spinoza, Leibniz.

**429 British Empiricism (5)**

Prereq: 4 philosophy courses, including 312. (alternate yrs) Locke, Berkeley, Hume.

**430 Contemporary Ethical Theory (5)**

Prereq: 4 philosophy courses, including 130, 240, 330, or 442. Significant current literature in selected topics of moral, social, political, and legal philosophy.

**431 History of Aesthetic Theory (5)**

Prereq: 4 philosophy courses. Readings from Plato to Dewey and relation of these theories to selected arts and recent criticism.

**432 Problems in Aesthetics (5)**

Prereq: 9 hrs philosophy, literature, or art. A variety of philosophical issues surrounding the arts

and aesthetics drawn from contemporary sources will be discussed. Topics include the nature of art, expression, interpretation, evaluation, and art and knowledge.

**434 Metaethics (4)**

Prereq: 4 philosophy courses including 130 or 240 or 430. The study of metaethics is the study of the nature of ethical or normative judgments. What are we doing when we make ethical judgments? Is it right to think that ethical judgments are capable of being true or false? If so, in virtue of what? We can also wonder about the nature of moral motivation. Does a judgment that something is morally wrong automatically entail that one has a motive not to do it? This course will be a survey of readings on these two questions.

**438 Kant (5)**

Prereq: 4 philosophy courses, including 312. Kant's Critique of Pure Reason with attention given to his ethical theory.

**440 Contemporary Social Philosophy (5)**

Prereq: 330 or 240 or 442 and 3 other philosophy courses. Consideration of any number of various issues in contemporary, social, political, and legal philosophy. Possible topics: theories of distributive justice, culpability, causality and responsibility, legal and moral rights, etc.

**442 Philosophy of Law (5)**

Prereq: 3 philosophy courses or perm. Consideration of nature and justification of law and examination of some specialized topics in philosophy of law, including ascription of responsibility, civil disobedience, theories of punishment, liberty, etc.

**444 Philosophy of Marxism (5)**

Prereq: 4 philosophy courses. Philosophical inquiry into classical and contemporary Marxist thought stressing Marx, Engels, Lenin, Stalin, Mao, and several contemporary Marxists such as Praxis group of Yugoslavia.

**448 Pragmatism (5)**

Prereq: 4 philosophy courses. Peirce, James, Dewey, and other American thinkers.

**450 Theory of Knowledge (5)**

Prereq: 4 philosophy courses, including 312. Critical examination of various views of what knowledge is and how it is attained.

**451 Metaphysics (5)**

Prereq: 4 philosophy courses, including 310 or 312. Discussion of basic philosophical issues such as: conceptual schemes and the external world, causation, universals, determinism and freedom, the nature of the mind, etc.

**458 Contemporary European Philosophy (5)**

Prereq: 4 philosophy courses, including 358 and 468. Phenomenology and existentialism as seen in Husserl, Heidegger, Scheler, Hartman, Dilthey, Cassirer, Gebser, Ingarden, Sartre, Camus, Marcel, Merleau-Ponty, and Ricoeur.

**468 Phenomenology (5)**

Prereq: 4 philosophy courses, including 312. Method and philosophy of phenomenological movement from Husserl to Merleau-Ponty.

**475 Chinese Philosophy (5)**

Prereq: 4 philosophy courses, including 371. Major Chinese philosophers and schools of thought from earliest times to present.

**476 Indian Philosophy (5)**

Prereq: 4 philosophy courses, including 370. Classical Hinduism.

**477 Buddhist Philosophy (5)**

Prereq: 4 courses, including 371. (on demand) Abhidharmika, Madhyamika, Yogacara, Zen, and other philosophical doctrines of Buddhism.

**478 African Philosophy (5)**

Prereq: jr. Critical examination of the question, debated today among African philosophers, whether traditional African thought systems should be regarded and developed as philosophical systems. Includes survey of most significant of these thought systems.

**490 Senior Seminar (3)**

Prereq: sr, 310, 312, 320. Survey of selected sub-fields of philosophy. Required of all majors in philosophy during the senior year.

**491 Seminar in Philosophy (1-15, max 15)**

Prereq: 5 philosophy courses. Selected problems.

**492 Applied Ethics (5)**

Prereq: 2 courses from 130, 235, 330, 331, 430. An examination of the relationship of applied ethics to ethics as a branch of philosophy, a survey of major areas within applied ethics (medical, business, journalistic, etc.), and a consideration of selected problems in each area.

**497 Independent Reading (1-9, max 12)**

Prereq: perm of chair.

**497T Philosophy Tutorial (1-10)**

Prereq: Honors Tutorial College students only. (fall) 3rd-yr tutorial studies in philosophy.

**498T Philosophy Tutorial (1-10)**

Prereq: Honors Tutorial College students only. (winter) 3rd-yr tutorial studies in philosophy.

**499 Senior Thesis (3-15)**

Prereq: perm. Must be enrolled in each of three senior quarters to achieve honors in philosophy. Research and writing of long philosophical paper.

**499T Philosophy Tutorial (1-10)**

Prereq: Honors Tutorial College students only. (spring) 3rd-yr tutorial studies in philosophy.

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## Physical Education

See Recreation and Sport Sciences—Physical Education Activity

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## Physical Therapy (PT)

**259A Introduction to Physical Therapy (2)**

(fall, spring). Designed for those students who are considering physical therapy as a career option. Presentations and topics of discussion will attempt to bring the student to an understanding of the physical therapy profession and the requirements for entry into the profession. 2 lec.

**295B Introduction to Physical Therapy Clinical Experience (3)**

For students who are considering physical therapy as a career, presentations and direct observation of evaluation and treatment of patients through Therapy Associates will help identify the various roles and settings for physical therapists. 1 lec, 4 lab.

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## Physics and Astronomy

**Astronomy (ASTR)****100 Survey of Astronomy (4) (2N)**

General introduction to astronomy, with emphasis on the structure of the universe beyond our solar system. Topics (chosen by instructor) may include historical astronomy, the sun, stars and galaxies, interstellar matter, black holes, the "Big Bang" theory, and the evolution of the universe. No prereq, but familiarity with basic algebra and geometry is beneficial. Students should enroll in PSC 100. 4 lec.

**100D Moons and Planets: The Solar System (4) (2N)**

General introduction to astronomy, with emphasis on our solar system and other planetary systems. Topics (chosen by instructor) may include historical astronomy, the sun, the surfaces, interiors, and atmospheres of the planets, comets, asteroids and meteor impacts, planets around other stars, and the origin of life. No prereq, but familiarity with basic algebra and geometry is beneficial. Students should enroll in PSC 100D. 4 lec.

**140 Observational Astronomy Laboratory (1) (2N)**

Experience with telescopes and locating stars, planets, and deep-sky objects in the night sky. Also covers major constellations, seasonal variations, lunar cycles, and, when appropriate, eclipses and comets. Meets at night only. Students should enroll in PSC 140. 2 lab.

**200 Introduction to Planetary Science (3) (2S)**

Prereq: 4 hrs PSC or GEOL or perm; MATH 113 or equiv; no credit for both ASTR 200 and PSC 200. An introduction to the physical processes

behind the formation and evolution of planets, moons, asteroids, and comets. Topics will include formation of the Solar System, planetary atmospheres and interiors, volcanism, meteor impacts, and cratering. Students should enroll in PSC 200.

#### 205 Life on Other Worlds? (3) (2N)

Prereq: 4 hrs PSC; MATH 113 or equiv; no credit for both ASTR 205 and PSC 205. An exploration of ideas relating to the possibility that life exists elsewhere in the universe, both on planets and moons within our solar system, and within other planetary systems. The course begins by considering our planet's formation and the conditions which may have led to life appearing here, then moves outward. Students should enroll in PSC 205.

#### 305 Fundamentals of Astrophysics (3)

Prereq: PHYS 253, MATH 263C. Physical foundations of astronomical observation and theory. Time and coordinate systems, orbits, celestial mechanics, radiation mechanisms, and spectra. Telescopes and instrumentation. Introduction to the physical properties of stars, galaxies, and interstellar matter. Overview of cosmological distance measurements and the "hot big bang" model.

#### 310 Astronomy Laboratory (1-3)

Prereq: PHYS 305 and perm. Repeated enrollment. Telescope observations and other laboratory studies dealing with astronomy.

#### 401 Stellar Astrophysics (3)

Prereq: 305, MATH 340, MATH 440. The physics of stellar atmospheres and interiors. Mathematical treatments of radiative transfer, hydrodynamics, and stellar structure; stellar atmospheres and spectra; stellar interiors; and nuclear energy sources. Stellar evolution, red giant stars, pulsating variables; physics of degenerate gases, white dwarfs, neutron stars, pulsars, black holes.

#### 402 Galactic and Interstellar Astrophysics (3)

Prereq: 305, MATH 340 and 440. Structure and evolution of the Milky Way galaxy and the interstellar medium. Stellar populations and orbits of stars in the galaxy; galactic dynamics, evolution of the galactic disk and star clusters. Physics of the interstellar gas, absorption and emission processes, HI and HII regions, molecular clouds. Hydrodynamic instabilities, star formation; supernova explosions and shock waves.

#### 403 Extragalactic Astrophysics and Cosmology (3)

Prereq: 305, MATH 340 and 440. Physics of galaxies and evolution of the universe. Dynamics of galaxy structure, formation, and interaction. Dark matter. Active galactic nuclei, radio galaxies, and quasars. Galaxy clusters and large-scale structure. Cosmological distance measurements, expansion of the universe. Introduction to general relativity; cosmological models, observational tests, cosmic microwave background. Primordial nucleosynthesis.

#### 410 Observational Astrophysics (3)

Prereq: 305. Modern observational techniques and instrumentation. Planning and execution of observational programs; data acquisition, reduction, and analysis; presentation of scientific results. 2 lec, 2 lab.

#### 450 Studies in Astronomy (1-3, arranged)

Prereq: 305 and perm.

### Physical Science (PSC)

#### 100 Survey of Astronomy (4) (2N)

General introduction to astronomy, with emphasis on the structure of the universe beyond our solar system. Topics (chosen by instructor) may include historical astronomy, the sun, stars and galaxies, interstellar matter, black holes, the "Big Bang" theory, and the evolution of the universe. No prereq, but familiarity with basic algebra and geometry is beneficial. Also listed as ASTR 100. 4 lec.

#### 100D Moons and Planets: The Solar System (4) (2N)

General introduction to astronomy, with emphasis on our solar system and other planetary systems. Topics (chosen by instructor) may include historical astronomy, the sun, the surfaces, interiors, and atmospheres of the planets, comets, asteroids and meteor impacts, planets around other stars, and the origin of life. No prereq, but familiarity with basic algebra and geometry is beneficial. Also listed as ASTR 100D. 4 lec.

#### 101 Physical World (4) (2N)

Prereq: no credit if 101L. Designed for nonscience majors. Fundamental ideas of measurement, motion, energy, electricity and magnetism, heat, atomic and nuclear physics. Introduction to relativity and quantum phenomena. 4 lec.

#### 101L Physical World (5) (2N)

Prereq: no credit if 101. Designed for nonscience majors. Fundamental ideas of measurement, motion, energy, electricity and magnetism, heat, atomic and nuclear physics. Introduction to relativity and quantum phenomena. 4 lec, 2 lab.

#### 105 Color, Light, and Sound (4) (2N)

Prereq: no credit if 105L. Designed for nonscience majors. Physical nature of light and sound including transmission, absorption, reflection, interference, and resonance. Applications include analysis of musical instruments, acoustics, optical systems, perception of color and sound. 4 lec.

#### 105L Color, Light, and Sound (5) (2N)

Prereq: no credit if 105. Designed for nonscience majors. Physical nature of light and sound including transmission, absorption, reflection, interference, and resonance. Applications include analysis of musical instruments, acoustics, optical systems, perception of color and sound. 4 lec, 2 lab.

#### 111 The Metric System (1)

Introduction to International (Metric) System of Units (SI) through lecture and laboratory experience. Topics include: history of and rationale for SI; SI and its rules for use; metric computation and conversion techniques. Not offered on Athens campus.

#### 131 Nano-Science and Technology (4) (2N)

Introductory course covering an overview of the concept of scale and of novel phenomena that arise as a function of scale, instrumentation that allows probing systems on the nanoscale, fabrication methods that yield nanoscale geometries, and the influence of this emerging field in our current and future lifestyles. 4 lec.

#### 140 Observational Astronomy Laboratory (1) (2N)

Experience with telescopes and locating stars, planets, and deep-sky objects in the night sky. Also covers major constellations, seasonal variations, lunar cycles, and, when appropriate, eclipses and comets. Meets at night only. Also listed as ASTR 140. 2 lab.

#### 200 Introduction to Planetary Science (3) (2S)

Prereq: 4 hrs PSC or GEOL or perm; Math 113 or equiv; no credit for both ASTR 200 and PSC 200. An introduction to the physical processes behind the formation and evolution of planets, moons, asteroids, and comets. Topics will include formation of the Solar System, planetary atmospheres and interiors, volcanism, meteor impacts, and cratering.

#### 205 Life on Other Worlds? (3) (2N)

Prereq: 4 hrs PSC; MATH 113 or equiv; no credit for both ASTR 205 and PSC 205. An exploration of ideas relating to the possibility that life exists elsewhere in the universe, both on planets and moons within our solar system, and within other planetary systems. The course begins by considering our planet's formation and the conditions which may have led to life appearing here, then moves outward.

### Physics (PHYS)

#### 201 Introduction to Physics (5) (2N)

(fall, winter) 1st course in physics; open to students from all areas. Students should have high school level algebra and trigonometry, but no calculus required. Recommended for students in liberal arts, architecture, industrial technology, geological sciences, plant biology, and premedicine. Mechanics of solids and liquids. No credit for 201 after 251. 3 lec, 2 lab, 1 recit.

#### 202 Introduction to Physics (5) (2N)

Prereq: 201 or 251. (winter, spring) No credit for 202 after 252 or 262. Continuation of 201. See 201 for description. Includes electricity, magnetism, heat, thermodynamics, waves, and sound. 3 lec, 2 lab, 1 recit.

#### 203 Introduction to Physics (5) (2N)

Prereq: 202 or 252 or 262. (spring, fall) No credit for 203 after 253. Continuation of 201 and 202.

See 201 for description. Includes light, relativity, quantum, atomic, and nuclear physics. 3 lec, 2 lab, 1 recit.

#### 210 Physics Seminar (1)

Provides overviews of classical mechanics, relativity, and contemporary physics. Films and current science news will be used to search for student interest in future study.

#### 251 General Physics (5) (2N)

Prereq: C- or better in MATH 263A or 263B or 266A. Classical physics with calculus and vectors. Newtonian mechanics, rotational dynamics, gravitation. 3 lec, 2 lab, 1 recit.

#### 252 General Physics (5) (2N)

Prereq: PHYS 251 and MATH 263B or 266B. Classical physics with calculus and vectors. Fluids, simple harmonic motion, wave mechanics and phenomena, thermodynamics, electrostatics. 3 lec, 2 lab, 1 recit.

#### 253 General Physics (5) (2N)

Prereq: 252. Classical physics with calculus and vectors. Capacitance, electric current and circuits, magnetism and magnetic fields, electric induction, A.C. circuits, electromagnetic waves, geometrical optics, interference, and diffraction of light. 3 lec, 2 lab, 1 recit.

#### 254 Contemporary Physics (4)

Prereq: 253 or EE 321. Introduction to relativity and quantum theory: selected topics in atomic, solid state, nuclear, particles, and cosmology.

#### 262 General Physics with Biological Applications (5) (2N)

Prereq: 251 or (201 and (MATH 263A or MATH 266A)) Classical physics with calculus, emphasizing biological and medical applications. Topics include thermodynamics, waves, sound, electricity, and magnetism. 3 lec, 2 lab, 1 recit.

#### 270 Special Studies (1-4)

Prereq: perm. Special studies in physics under supervision of faculty member.

#### 272 Electronics Laboratory (2)

Prereq: 253 and phys major or perm. (winter) Circuit analysis, electronic measurements, semiconducting devices and instrumentation from DC to microwaves. 4 lab.

#### 273 Electronics Laboratory (2)

Prereq: 272 and phys major or perm. (spring) Circuit analysis, electronic measurements, semiconducting devices, and instrumentation from DC to microwaves. 4 lab.

#### 297T Physics Tutorial (1-15)

Prereq: Honors Tutorial College students only. (fall) 1st-yr tutorial studies in physics.

#### 298T Physics Tutorial (1-15)

Prereq: Honors Tutorial College students only. (winter) 1st-yr tutorial studies in physics.

#### 299T Physics Tutorial (1-15)

Prereq: Honors Tutorial College students only. (spring) 1st-yr tutorial studies in physics.

#### 303 Computer Simulation Methods in Physics (4)

Prereq: phys major or perm. Introduction to scientific programming (e.g., Java, C++, etc.), particularly to the methods of computer simulations, with a special emphasis on problems in physics. 2 lec, 4 lab.

#### 311 Mechanics (4)

Prereq: 253 or 315; MATH 340. (fall) Fundamentals of physical mechanics using vector analysis and ordinary differential equations. Particle dynamics, accelerating reference systems, central forces and celestial mechanics.

#### 312 Mechanics (4)

Prereq: 311. (winter) Continuation of 311. Many-particle systems, rigid body dynamics, Lagrangian methods, and small oscillations.

#### 351 Modern and Quantum Physics (4)

Prereq: 253. Introduction to relativity and quantum theory. Particle and wave propagation, 3-dimensional hydrogen atom.

#### 352 Modern and Quantum Physics (4)

Prereq: 351. Quantum effects, nuclear and particle physics, statistical physics, molecular and solid state physics; astrophysics, general relativity, and cosmology.