CR 401 Advanced Criminological Seminar
A review and critical analysis of criminological theories, their relation to the causes of crime, and their impact on contemporary public policy. As the department's capstone course, this course will also include an examination of various aspects of contemporary criminal justice. Prerequisites: CR 101 and Permission of Instructor

3 Credits

CR 407 Penology
This course will trace the history and philosophy of the penitentiary movement in the United States and Europe. Central to this concern will be an examination of the social, political, and economic changes which occurred in 18th and 19th Century America that led to the rise of the modern penitentiary. Classic and contemporary theory in penology will be examined with an emphasis on the policy implications of the various theoretical orientations. A critical approach will be used to suggest the future of imprisonment in America as a means of social control. Prerequisite: CR 101, CR 264

3 Credits

CR 415 Investigation of Violent, Serial, and Sexually Motivated Crime
This course is an Investigation of Violent, Serial, and Sexually Motivated Crime. Students will explore the most recent research findings and forensic techniques that enable investigative agencies to understand, successfully investigate, and prosecute those individuals who commit violent crimes of the serial and sexually motivated nature.

3 Credits

CR 420 Criminology Internship
This is a flexible credit repeatable course for 3-12 credits. Students will experience working in the criminal justice field under the supervision of a practitioner and an instructor. Students are permitted to take a maximum of 12 credits during their four years. Prerequisites: CR 101 and Sophomore standing with a 2.5 QPA in the major and overall and instructor permission. Only seniors may take 12 credits at one time with instructor permission.

3-12 Credits

CR 420C Criminology Clinical
This is a clinical internship course for students pursuing the Criminal Addictions Professional Certificate.

3 Credits

CR 430 Crime and Social Inequality
This course will examine the impact of social inequality on crime, as well as how crime impacts inequalities in our culture. Students will examine the various effects that disparate conditions have on certain populations in our culture, and in turn how those inequalities can affect crime, criminal behavior, and our criminal justice system's reaction to it. In addition, the interaction of conditions like class, age, gender, race, and ethnicity with criminal behavior will be scrutinized. Social conditions in our culture which may have direct and indirect effects on both offenders and victims will be investigated. The course will explore application of the Mercy values into societal responses to inequality and the responses of the criminal justice system to criminal behavior and victimization. Prerequisites: CR 101, CR 110, SO 101, and SO 102

3 Credits

CR 450 Criminal Justice Ethics
This course provides a thorough review of the nature and scope of ethics, the function of law and the meaning of justice within the context of the American jurisprudence system, students will explore selected ethical issues currently facing the field of criminology. In addition, we will explore the classic dilemmas of clashing obligations in ethics and law as recounted from Plato to the present. In this latter sense, this course will mirror a course in law and morality from a jurisprudential and philosophical perspective. Prerequisite: CR 101

3 Credits

CR 470 Women and Crime
A study of the nature and extent of women's crimes, theories of female criminality, processing of woman offenders through the criminal justice system, women as victims of crime, and opportunities for women as employees in criminal justice agencies. Prerequisite: CR 101

3 Credits

CR 475 Criminal Investigative Analysis (Criminal Profiling)
In this course, the student will synthesize the information presented in each of the previous forensic courses encompassing the extensive overview and applications of the various forensic disciplines, the techniques of crime scene investigation associated with evidence recognition, collection preservation, interpretation, and reconstruction as well as the specific investigative techniques involved with homicide and sexually motivated crimes which criminal investigative analysis is predicated upon.

3 Credits

CR 481 Advanced Special Topics in Criminology
A seminar providing study of selected topics not emphasized in other upper-level Criminology courses. This course may be repeated up to two (2) times without repeating a given topic. Prerequisite: CR 101

3 Credits

(CS) Computer Science

CS 103 Communication Technology Literacy
This course, while familiarizing the student with the word processing, spreadsheet, and presentation functions of an integrated office suite, also focuses on the personal and social responsibilities of using information communication technologies.

3 Credits
CS 103A Communication Technologies Responsibilities Component ................................. 1 Credit
This course focuses on the personal and social responsibilities of using information communication technologies (ICTs). Because this is a component of CS 103, students who have taken CS 103, or plan on taking CS 103, should not take this course. Prerequisite: Proficiency with MS Office.

CS 103B Communication Technologies Literacy Software Component .................................. 2 Credits
This course consists of the integrated office suite portion of CS 103 covering current introductory word processing, spreadsheet, and presentation functions. Students completing this course through a dual-enrollment program should take CS 103A to fulfill the CS 103 requirement of the College.

CS 206B Database Management Systems ............................................................................. 3 Credits
This course discusses historical and current database concepts, including data structures, referential integrity, query languages, security and interfaces. Predominantly hands-on, this course uses an industry-standard, object-oriented database for developing applications. Prerequisite: CS 104B or a comparable programming language, ICT 225 recommended.

CS 212 Multimedia Presentations ....................................................................................... 1 Credit
This course will present basic skills needed to create presentations for the healthcare, business, education, and other environments. Course emphasis is on conceptualizing and producing effective presentations. This class will be taught as a production laboratory in which students will work individually building multimedia presentations on topics agreed to by the instructor and student.

CS 223 Introduction to Networking Systems ..................................................................... 3 Credits
This course introduces the student to computer networking systems. Initial foundation topics include the history, terminology, applications and impact of networks. Fundamental hardware, software, and protocol components of local and wide area networks follow. This course covers all requirements needed to achieve professional certification. CS 123 is recommended.

CS 225 Current Microcomputer System Design .................................................................. 3 Credits
The primary focus of this course is to enable the student to work with current microcomputer systems at a hardware level. The course requires students to assemble, configure, upgrade and debug hardware systems. An overview of current OS installation and configuration issues is also included. This course covers all requirements needed to achieve professional certification.

CS 226 Microcomputer Operating Environment .................................................................. 3 Credits
Focusing predominantly on the most current versions of Windows, this course provides students with experience in the functions and features of the operating environment. Topics include OS installation, OS configuration, basic and advanced file systems, P2P networking, and OS performance issues. This course covers all requirements needed to achieve professional certification.

CS 228 Client/Server-based Operating Systems ............................................................... 3 Credits
This course focuses on the most current networking operating environments. Topics include introduction to client/server networking concepts, installation and configuration of Windows-based network system software, advanced file systems, network user accounts, and network administration issues. This course covers all requirements needed to achieve professional certification. Prerequisite: CS 223, CS 226 or comparable experience.

CS 229 Introduction to LINUX ........................................................................................... 3 Credits
This course provides the student with a thorough introduction to the LINUX operating system. Students will be required to install the operating system, create and justify a partition scheme and differentiate between the most popular system file formats. Students will learn to identify the various formats that code and binaries can be packaged and will learn to map specific software to specific functional needs. This course covers all requirements needed to achieve professional certification. Prerequisite: CS 223 or CS 226.
CS 230 Technology and Management Information ......................................................... 3 Credits
For the student already familiar with fundamental computer concepts, this course examines the major applications of computer technology in education, government, business, and research. The course emphasizes techniques for design, development, and management of computer-based information systems.

CS 242 Introduction to Web Site Development ................................................................. 3 Credits
This hands-on course introduces the student to designing, creating, and publishing a web site using a front-end software package. Exercises include integrating a database; working with action buttons, navigation structures, graphics, charts, tables, and site maps; as well as using dynamic web templates.

CS 250 Introduction to Digital Forensics ........................................................................ 3 Credits
This course is designed to introduce the student to the exciting and demanding field of digital forensic analysis and media exploitation from both the law enforcement and IT perspectives. After a brief review of the technology associated with computers and other digital devices, the Internet, and e-mail, the student will examine the legal fundamentals governing various types of searches of digital evidence, and become familiar with drafting and using search warrants to obtain digital evidence. Through hands-on experience, the student will also collect evidence with a preview and imaging tool used extensively in the field of digital forensics. Prerequisite: CR 201 with a grade of C or better.

CS 281 Special Computer Topics .................................................................................. 1-3 Credits
This course will explore current information technology topics involving new developments in computer-related technology, primarily information communications technologies. Course content will vary each semester. Given that this course is a variable credit course (1-3 credits), it may be repeated up to six (6) credits without repeating a given topic. This course may be given the suffix of P for programming and D of design based on the course content for the semester. Prerequisites: EN 110 and EN 111

CS 301 Management Information Systems Analysis ..................................................... 3 Credits
A study of information systems analysis and methodologies. Topics include problem definition statements, feasibility studies, data flow diagrams, quality assurance, and documentation techniques. Prerequisite: CS 230.

CS 302 Technology in Education .................................................................................. 3 Credits
Intended for the pre-service teacher, this course will provide students with a solid foundation for understanding (1) the range of current technology available to elementary teachers and other professionals, (2) ways to evaluate technological applications, and (3) strategies of integrating technological innovations into professional settings. Prerequisite: Permission of Instructor, Pennsylvania Child Abuse History Clearance, State Police Request for Criminal Record Clearance and FBI General Criminal History Record for Criminal (Fingerprint).

CS 303B C++ Programming ....................................................................................... 3 Credits
An introduction to C++ programming concepts and methods in a graphical environment. Course content covers such topics as data types, variables, branching, loops, arrays, and structures. The course also provides an introduction to dynamic memory management concepts and procedures. All programming projects will be accomplished using a graphical C++IDE. Prerequisite: CS 104B or experience in other programming languages is recommended.

CS 304 Advanced Visual Basic .................................................................................... 3 Credits
This course reviews basic and intermediate Visual Basic concepts then focuses on creating Visual Basic .NET applications. Programming assignments will be an integral part of the class. Prerequisites: CS 104B, CS 206B, or comparable experience.

CS 305 Logic and Structured Design ............................................................................ 3 Credits
This is an in-depth course covering programming logic, processor design, memory segmentation, assembler, machine language, and pseudo code. Prerequisites: An algebra course and a programming course or comparable experience.

CS 306 Database Design ............................................................................................ 3 Credits
As a follow-up to CS 206B, this course concentrates on data structuring, using two industry-standard database management packages, one of which will be an object-oriented language. Design concepts will be emphasized. Prerequisite: CS 206B.

CS 310 Computer Security, Ethics, and Fraud ............................................................... 3 Credits
This course discusses computer security vulnerability and computer-related legal and ethical issues. Topics include copyrighted software, security practices, and accessing personnel and medical information.
CS 345 Information Technology Internship ................................................................. 3-12 Credits
On-the-job training at business sites with emphasis on information technology assignments. Emphasizes experiential learning and the integration of classroom study and work place practice. A minimum of 135 hours of on-site experience is required for 3 credits. Additional credits are dependent upon the number of hours to be worked and the nature of the work experience. Additional credits must be approved, in advance of registration, by the Department Chair. A maximum of six credits can be used for requirements in the major; the remaining credits can be used as free electives. This course may be repeated for a maximum total of 12 credits within the degree. Prerequisites: Information Technology major, junior standing, minimum of a 2.0 cumulative GPA, Faculty Internship Supervisor approval.

CS 355 Intermediate Digital Forensics ................................................................. 3 Credits
This course is designed to continue the student's education in the field of digital forensic analysis and media exploitation, from both the law enforcement and IT perspectives. Through hands-on experience, the student will learn additional techniques used to collect evidence with a preview and imaging tool used extensively in the field of digital forensics. The student will also gain an understanding of the Windows Registry, and the evidentiary value of the artifacts stored within the Registry database. Prerequisites: CS 250 or equivalent experience.

CS 360 Internet Technologies ............................................................................... 3 Credits
The course is an investigation of current Internet technologies. Students will be involved from a user's perspective by doing research using a variety of search techniques. Students will also be involved from a developer's perspective by using proper organizational strategies to create a user-friendly Web site. Prerequisites: A programming course is recommended.

CS 381 Special Computer Topics ........................................................................ 3 Credits
This course will provide an opportunity for an in-depth study of a topic, such as human computer interaction, not emphasized in other upper-level computer technology courses. Extensive research, theoretical analysis and thesis-level writing is involved. Course content will vary each semester. This course may be given the suffix of P for programming and D of design based on the course content for the semester. This course may be repeated up to two (2) times without repeating a given topic. Prerequisites: One CS course, EN 110, and EN 111.

CS 403B Advanced C++ Programming ............................................................ 3 Credits
This course takes students beyond the basics of C++ programming into advanced programming methods. Primary focus is on development of graphical applications utilizing MFC and template concepts. The course provides the basic skills needed to achieve professional software developer certification. Prerequisite: CS 303B.

CS 404 Advanced Concepts in Programming .......................................................... 3 Credits
This course, designed for those who have taken a previous programming class or have programming experience, takes students beyond the basics of programming into advanced programming concepts. This is a hands-on programming course that will focus on the design of applications. This course may be repeated up to three (3) times without repeating a given topic. Prerequisite: Two programming courses.

CS 411 Operations Management Science and Computer Modeling ....................... 3 Credits
Introduction to management science and quantitative models. Topics include linear programming, transportation and inventory models, decision theory, forecasting and quality control. Prerequisites: CM 112 and CM 220.

CS 420 Advanced Networking Systems .................................................................. 3 Credits
This course addresses advanced networking issues found in a server-based environment. Topics include network directories, network administration, basic network design, network security, and network performance considerations. This course covers all requirements needed to achieve professional certification. Prerequisites: CS 233, CS 226, and CS 228 (or permission of the instructor).

CS 436 Information Technology Project Management ............................................... 3 Credits
This course provides the student with processes, techniques and templates to effectively and efficiently manage an IT project from idea to execution. Topics will include project management and system analysis fundamentals, then will focus in-depth on planning, estimating, scheduling, controlling and tracking the project. An industry-standard project management package and simulation program will be used extensively throughout the class. Prerequisites: Any two 200-level CS courses, CS 301 (or permission of the instructor).
CS 456 Advanced Digital Forensics ................................................................. 3 Credits
The third course of a three component series, Advanced Digital Forensics is designed to introduce the student to advanced artifact recovery techniques. Building upon prior coursework, and using an industry standard analysis suite, the student will utilize advanced techniques to recover digital artifacts. Finally, the student will learn to prepare well-written reports, organize case files, and effectively testify in a court of law as an expert in the field of digital forensics. Prerequisites: CS 355 or equivalent experience.

CS 457 Mobile Device Forensics ................................................................. 3 Credits
This course is designed to introduce the student to advanced techniques used to collect evidentiary data from mobile devices, such as smartphones and tablets. Through hands-on experience, the student will collect evidence with a preview and imaging tool used extensively in the field of digital forensics. The student will learn how to design a forensic acquisition plan and produce a forensic report. Finally, the student will gain an understanding of data verification using outside sources, such as mobile device location data. Prerequisites: CS 456 or equivalent experience.

CS 458 Data Extraction and Analysis .......................................................... 3 Credits
This course is designed as a final step in the Digital Forensics concentration of study. The focus will be the actual techniques used to effectively and efficiently navigate through vast amounts of evidentiary data in various formats with the goal of providing a clear, concise investigative report that is useful to both investigators and prosecutors. Prerequisites: CS 456 or equivalent experience.

CS 481 Special Computer Topics ................................................................. 3 Credits
This hands-on and research-oriented course will focus on specialized computer topics not covered in other upper-level computer courses, such as configuration management, game programming, geographic information systems, data mining or cryptography. Designed for IT majors, the course content will vary each semester. This course may be given the suffix of P for programming and D of design based on the course content for the semester. This course may be repeated up to two (2) times without repeating a given topic. Prerequisites: EN 110, EN 111, and permission of instructor.

(DMS) Diagnostic Medical Sonography

DMS 100 Introduction to Ultrasonography ................................................... 1 Credit
An orientation will be included in this course to review the Policy and Procedure Manual, goals of the program, curriculum sequence, clinical education guidelines, objectives, and grading policies. This course will focus on introducing the student to the field of diagnostic medical sonography. Course work will include information concerning the foundations of clinical medicine pertinent to sonography, ultrasound equipment knowledge, ultrasound applications, dangers of ultrasonography, and professional ultrasonography organizations.

DMS 200 Abdominal Ultrasonography (US) ................................................. 2 Lecture/3 Lab/3 Credits
This course will include an extensive presentation of normal and abnormal sonographic anatomy of the abdomen to include the liver, gallbladder, kidneys, spleen, pancreas, and vascular structures. Physical assessment, clinical symptoms, and laboratory findings for various abdominal pathologies will be included. Students will become familiar with ultrasound equipment, film recording, scanning protocols, technical factors, and image quality. Prerequisite: DMS 100. Co-requisite: DMS 205.

DMS 202 Obstetrical and Gynecological Ultrasonography .............................. 2 Lecture/3 Lab/3 Credits
This course will include an extensive presentation of normal and abnormal sonographic anatomy of the female pelvis and sonographic evaluation of pregnancy from conception to birth including fetal development. Physical assessment, clinical symptoms, and laboratory findings related to the female pelvis will be included. Students will continue to familiarize themselves with scanning protocols, technical factors, and image quality. Prerequisites: DMS 200, DMS 205. Co-requisite: DMS 401.

DMS 205 Superficial Structures and Vascular Ultrasonography ...................... 2 Lecture/3 Lab/3 Credits
This course includes discussion of the anatomy, pathology, and pathophysiology of vascular and superficial structures including the thyroid, parathyroid, breast, and scrotum. Sonographic image correlation, scanning protocols, technical factors, and image quality are included. Prerequisite: DMS 100. Co-requisite: DMS 200.

DMS 401 Physics and Instrumentation I ....................................................... 240 Clinical Hours/2 Credits
An in-depth study of basic ultrasound physics principals and instrumentation to include acoustical waves, beam dynamics and attenuation in tissues, parameters affecting sound transmission, transducers, and display systems. Prerequisites: DMS 200 and DMS 205. Co-requisite: DMS 202.