Information Technology (INFOTC)

INFOTC 1000: Introduction to Information Technology
This course introduces the field of Information Technology including foundational experiences and knowledge, the history of digital technologies, emphasis areas in the program, career opportunities, and ethical/social issues. Students participate in activities that introduce students to digital media, digital systems, and software engineering. Students learn to use distributed version control systems and how to work on collaborative teams.

Credit Hours: 3

INFOTC 1001: Topics in Information Technology
Topics may vary from semester to semester. May be repeated upon consent of department.

Credit Hours: 3

INFOTC 1040: Introduction to Problem Solving and Programming
An introduction to problem solving methods and programming concepts, providing experience in designing, developing, implementing, and testing programs. Cannot be taken for credit after CMP_SC 1050.

Credit Hours: 3

INFOTC 1600: Digital Systems
This course provides a foundation of knowledge of digital systems including terminology, concepts, architecture, processes, tools, hardware, and software.

Credit Hours: 3

INFOTC 1610: Introduction to Digital Media Design
This project-based course is an introduction to the concepts and practices of audio design, graphic design, motion media design and basic video editing. Current technologies are employed to examine design fundamentals and applications of media design that apply to audio and video production and new media production.

Credit Hours: 3

INFOTC 1615: Color Processing and Design
This course is an intensive study of the techniques, software, principles, technology, data management practices, sciences, problems and theories of color processing for video in media. The course will prepare students for work in industries related to color processing and delivery, while providing further enrichment to technology related to media production, including camera and sensor science, computer hardware, and peripherals. Graded on A-F basis only.

Credit Hours: 3

INFOTC 2040: Programming Languages and Paradigms
This course presents programming principles and their syntactical representation and implementation across languages including those that are compiled and interpreted. The course shows how to implement algorithms and data structures to solve problems while utilizing paradigms offered by the programming languages such as procedural, object-oriented, protocol-oriented, functional, and declarative. Language support for strong and weak typing and type safety are covered along with support for optional values. Provides experience in developing algorithms and determining their efficiency, designing application architecture, and developing applications. Building and using libraries/application programming interfaces is covered. Git and GitHub are used for code versioning and collaboration. Integrated development environments (IDEs) are used for managing, building, debugging, and testing applications.

Credit Hours: 3

Prerequisites: INFOTC 1040 or CMP_SC 1050, or prior experience with programming and consent of instructor

INFOTC 2610: Digital Media Design I
This project-based course examines the fundamentals of media technology, from capture devices to the software and hardware that processes data. Through hands-on experience with capturing technology, audio recording devices, and the software and hardware components needed to manipulate the recordings, students will process big-data files to create meaningful manipulations in assembly, engineering, and colorization. Students will utilize a spectrum of camera equipment, recording devices and facilities to achieve an understanding of audio/video capture, project planning and implementation, hardware assessment, optimization practices through hardware acceleration, and video processing. This course also focuses on basic editing theory and industry trends. This is done through in-class demonstrations, online modules, and supplementary material hosted online.

Credit Hours: 3

Prerequisites: C- or higher in INFOTC 1610 or FILMS_VS 1880 or DST_VS 1880, or instructor content through course equivalencies

INFOTC 2620: Computer Modeling and Animation I
Introduction to the field of computer modeling and animation with an emphasis on tools. Learn programming methods for developing customized modeling and animation algorithms. Graded on A-F basis only.

Credit Hours: 3

INFOTC 2630: Introduction to Game Theory and Design
Students will develop foundational skills in game design and theory, and become proficient in the tools used to develop conceptual gaming environments. The student will develop skills to discuss, develop, and demonstrate the design process in cooperation with current game theories and practices. The student will develop collaborative and cooperative design techniques mirroring that of the industry. Graded on A-F basis only.

Credit Hours: 3
INFOTC 2810: Fundamentals of Network Technology
This course includes an overview of networking and the common wireless standards. Graded on A-F basis only.

Credit Hours: 3
Prerequisites: INFOTC 1040 or CMP_SC 2050 with C- or higher

INFOTC 2830: Web Application Development I
(same as CMP_SC 2830). This course will attempt to provide a comprehensive understanding of the evolution, the technologies, and the tools of the Internet. In particular, issues pertaining to the World Wide Web and Multimedia (HTML, CGI, Web based applications) will be discussed in detail.

Credit Hours: 3
Prerequisites: INFOTC 2040 or CMP_SC 2050 with a C- or higher

INFOTC 2910: Cyber Security
This course covers numerous platform-independent security topics including threats, problem ports and services, theory and practice of defense in security, intrusion detection, data security, securing remote access, user education and support, designing a secure network and security management. Graded on A-F basis only.

Credit Hours: 3
Prerequisites: INFOTC 1040 or CMP_SC 2050, and INFOTC 2810

INFOTC 3001: Topics in Information Technology
Topics may vary from semester to semester. May be repeated upon consent of department. Graded on A-F basis only.

Credit Hours: 3

INFOTC 3330: Object Oriented Programming
(same as CMP.SC 3330). This course focuses on object-oriented programming concepts such as: Abstraction, Polymorphism, Encapsulation, Inheritance, Interfaces, Abstract Classes, Files, Streams, and Object Serialization. Topics such as GUI and event-driven programming, APIs, and design patterns are also tackled. Java SE 8, NetBeans 8 IDE, and JavaFX Scene Builder 2.0 are used to build Java SE applications that include user interfaces developed using JavaFX. Graded on A-F basis only.

Credit Hours: 3
Prerequisites: INFOTC 2040 or CMP.SC 2050 with C- or higher

INFOTC 3380: Database Systems and Applications
This course covers database management systems (DBMS) and the development of applications that utilize databases including relational/SQL and NoSQL types. Topics include the evolution of data storage and databases, data modeling, relational and NoSQL databases, SQL, document, graph and key-value storage and retrieval, application development using databases, database scaling, database trends, and popular database systems. Graded on A-F basis only.

Credit Hours: 3
Prerequisites: C- or higher in CMP.SC 2050 or INFOTC 2040; or experience developing applications and permission of the instructor

INFOTC 3530: UNIX Operating System
(same as CMP.SC 3530). This course is an introduction to UNIX and UNIX-like operating systems and interfaces, to include the file system, command shells, text editors, pipes and filters, input/output system, shell scripting and Regular Expressions. The course will also incorporate an aspect of programming in a UNIX environment, cloud computing, containers and an introduction to System Administration. Graded on A-F basis only.

Credit Hours: 3
Prerequisites: INFOTC 2040, or CMP.SC 2050, or Instructor Consent

INFOTC 3600: User Experience Design I
This course is a first in a series that focuses on User Experience (UX) Design for software applications. This course introduces the beginner to processes, techniques and methods of evaluation to design, model and evaluate application designs and user interfaces.

Credit Hours: 3
Prerequisites: May be restricted to Information Technology majors during early registration

INFOTC 3610: Digital Media Design II
This project-based course builds upon the fundamentals of production and media processing learned in INFOTC 2610 and introduces industry standard advanced video and audio capture technology, software, and data management systems. The course is designed to provide further hands-on experience with digital video capturing technology, non-linear editing software, Digital Audio Workstations, and broadcast technology through three large-scale collaborative media projects. These projects build upon the principles of data management and software, while introducing project management, team management, and direct-to-market media strategies. Students will utilize a spectrum of industry standard camera equipment, recording devices and facilities to achieve a fuller understanding of audio/video capture and post production.

Credit Hours: 3
Prerequisites: C- or higher in INFOTC 2610. Instructor consent with approved equivalencies

INFOTC 3620: Computer Modeling and Animation II
This course covers advanced methods for modeling and animation with an emphasis on computer science theory and virtual reality. Graded on A-F basis only.

Credit Hours: 3
Prerequisites: C- or higher in INFOTC 2620

INFOTC 3630: Introduction to Virtual Reality
The course will provide students with a good understanding of the fundamentals of virtual reality and practical hands on VR experience development skills. It will introduce students to the software, hardware, and concepts involved with the current state of the art in virtual reality. This course will focus on using the recent consumer-grade equipment to design and construct virtual environment and experience.

Credit Hours: 3
Prerequisites: INFOTC 1040 or CMP.SC 1050 with C- or higher
INFO TC 3640: Motion Graphics and Visual Effects I
This advanced media creation course is an introduction to the fundamentals of motion graphic design, 2-D animation, and visual effects creation. It is a project based course that requires understanding of NLEs, experience in media creation and design, understanding of basic audio/video compression, and understanding of basic media design and concepts. Computer programs designed for graphic design, motion graphics, 2-D animation, and visual effects are integrated throughout the course. Starting media will be provided for each project.

Credit Hours: 3
Prerequisites: C- or higher in INFOTC 1610

INFO TC 3650: Project and Team Management
This course focuses on the business analysis, development tools, communication skills, and management techniques required to successfully lead personnel, meet deadlines, and create digital media projects in today's media production industry. May be taken as Writing Intensive.

Credit Hours: 3
Prerequisites: C- or higher in INFOTC 1610 or FILMS_VS 1880 or DST_VS 1880

INFO TC 3650W: Project and Team Management - Writing Intensive
This course focuses on the business analysis, development tools, communication skills, and management techniques required to successfully lead personnel, meet deadlines, and create digital media projects in today's media production industry.

Credit Hours: 3
Prerequisites: C- or higher in INFOTC 1610 or FILMS_VS 1880 or DST_VS 1880

INFO TC 3660: Audio Engineering
This course is an intensive study of the techniques and art behind the use of audio in today's media design environments. From the theater to television, from tablet and mobile device to computer, this course will focus on the four major sound design areas: sound in cinema, sound creation, sound manipulation, and environmental sound layering.

Credit Hours: 3
Prerequisites: C- or higher in INFOTC 1610 or FILMS_VS 1880 or DST_VS 1880

INFO TC 3810: Computer Network Security
This course covers principles of networking configuration and security authentication, IP security, network management security, wireless security, and system security by studying attacks on computer systems, network, and the Web as well as detection and prevention. Work is completed in Unix/Linux environments and in Microsoft Windows environment. Students will need to setup a virtual private infrastructure to perform multiple tasks; additionally unlimited AWS cloud resources will be available for them. The course emphasizes 'learning by doing' and has a 90% hands-on and 10% theory. Much of this information consists of skills and abilities that employers want and expect in the real world of IT - in a small to medium size organization. Graded on A-F basis only.

Credit Hours: 3
Prerequisites: INFOTC 2810

INFO TC 3850: Computer System Administration
This course will cover network management tools, network maintenance, data management, remote access management, management tasks, responsibilities and ethics, required plans and policies, design of a well-managed network. Some work will be done in both Windows and Linux environments. Graded on A-F basis only.

Credit Hours: 3
Prerequisites: INFOTC 2040 or CMP_SC 2050, junior standing. May be restricted to Information Technology majors during early registration

INFO TC 3910: Advanced Cyber Security
Students develop a deeper understanding of modern information and system protection technology and methods, including examining the various areas of network security including intrusion detection, reconnaissance, exploitation, and defense against cyber-attacks, as well as principles and techniques for digital forensics investigation. Graded on A-F basis only.

Credit Hours: 3
Prerequisites: INFOTC 2910

INFO TC 3940: Internship in Information Technology
Information Technology-related experience in business or industry jointly supervised by faculty and IT professionals. Students should apply one semester in advance for consent of the supervising professor. Graded on an S/U basis only.

Credit Hours: 1-6
Prerequisites: Instructor Consent

INFO TC 3990: Topics in Information Technology
Topics may vary from semester to semester. May be repeated upon consent of department. Graded on A-F basis only.

Credit Hours: 3
Prerequisites: May be restricted to Information Technology majors during early registration

INFO TC 3990: Topics in Information Technology - Writing Intensive
Topics may vary from semester to semester. May be repeated upon consent of department, Graded on A-F basis only.

Credit Hours: 3
Prerequisites: May be restricted to Information Technology majors during early registration

INFO TC 4001: Topics in Information Technology
Topics may vary from semester to semester. May be repeated upon consent of department. Graded on A-F basis only.

Credit Hours: 3
Prerequisites: May be restricted to Information Technology majors during early registration

INFO TC 4085: Independent Projects
A student interested in doing an independent study project should first choose an area and instructor to work with. The student and instructor decide on a suitable Information Technology topic. The student writes up a detailed description of the project, including references, deadlines and deliverables. The instructor and student decide on details for completing the project during the semester for a grade.

Credit Hours: 3
Prerequisites: Consent of instructor
INFOTC 4320: Software Engineering
Software Engineering covers the principles, processes, and professional practices used to design, develop, test, deploy, and manage software systems in a team-based, collaborative environment. A range of software engineering methodologies are covered with an emphasis on agile software development using incremental methods of managing the development activities.

Credit Hours: 3
Prerequisites: INFOTC 2040 or CMP_SC 2050 or permission of the instructor

INFOTC 4390: Database Administration
This course is designed to give a firm foundation in Database Administrators' tasks. The primary goal is to give necessary knowledge and skills to setup, maintain and troubleshoot an Oracle database. This is an instructor-led course featuring lecture and hands-on exercises. Online demonstration and written practice sessions reinforce the concepts and skills introduced. The course defined objectives are designed to support preparation for the Oracle Certified Professional examination.

Credit Hours: 3
Prerequisites: CMP_SC 4380

INFOTC 4400: C#/ .NET Development
Learn how to develop and debug multi-threaded Windows desktop applications based on the object-oriented (OO), Model-View-Controller (MVC), and Model View ViewModel (MVVM) paradigms using C#, .NET, Windows Presentation Foundations (WPF), and Visual Studio. Graded on A-F basis only.

Credit Hours: 3
Prerequisites: INFOTC 2040 or CMP_SC 2050

INFOTC 4405: iOS App Development I
(same as CMP_SC 4405). This is a first in a series of courses on developing iOS applications using Xcode, and the Swift programming language on the macOS platform.

Credit Hours: 3
Prerequisites: INFOTC 1040 or CMP_SC 1050, or consent of instructor
Recommended: Prior experience programming in any programming language. The student should understand basic language concepts such as variables, data structures, control structures, and functions

INFOTC 4400: iOS App Development I
This is the first in a series of courses on developing iOS applications using Xcode and Swift programming language on the macOS platform.

Credit Hours: 3
Prerequisites: INFOTC 2040 or CMP_SC 2050; or permission of instructor with applicable experience

INFOTC 4410: Android App Development I
This is the first in a series of courses on developing Android applications using Android Studio and the Java and Kotlin programming languages.

Credit Hours: 3
Prerequisites: INFOTC 1040 or CMP_SC 1050, or consent of instructor

INFOTC 4410: Android App Development II
This is the second course in a series on developing Android applications using Android Studio and the Java and Kotlin programming languages. This course covers intermediate-level topics in application design, more complex UI implementations, and data persistence.

Credit Hours: 3
Prerequisites: INFOTC 4410, or consent of instructor

INFOTC 4420: Android App Development II
This is the second in a series of courses on developing Android applications using Xcode and Swift programming language on the macOS platform. This course covers intermediate-level topics in application design, more complex UI implementations, and data persistence.

Credit Hours: 3
Prerequisites: INFOTC 4405 with C- or higher

INFOTC 4425: iOS App Development II
This is the second in a series of courses on developing iOS applications using Xcode and Swift programming language on the macOS platform. This course covers intermediate-level topics in application design, more complex UI implementations, and data persistence.

Credit Hours: 3
Prerequisites: INFOTC 4420 or permission of the instructor

INFOTC 4440: Android App Development III
This is the third in a series of courses on developing Android applications using Android Studio and the Java and Kotlin programming languages. This course covers advanced topics in application architecture, application design, data persistence, and client-server architecture.

Credit Hours: 3
Prerequisites: INFOTC 4420 or permission of the instructor

INFOTC 4445: iOS App Development III
This is the third in a series of courses on developing iOS applications using Xcode and Swift programming language on the macOS platform. This course covers advanced topics in application architecture, application design, complex UI designs, data persistence, and client-server architecture.

Credit Hours: 3
Prerequisites: INFOTC 4425

INFOTC 4500: Team-Based Mobile Device Application Development
This is a multi-disciplinary, team-based course on developing applications for mobile devices. Teams will be comprised of students who are software developers and students who are designers. Graded on A-F basis only.

Credit Hours: 3
Prerequisites: INFOTC 2040; or CMP_SC 2050; or permission of instructor with applicable experience

INFOTC 4600: User Experience Design II
This course is the second in a series that focuses on User Experience (UX) Design for software applications. This course further develops the processes, techniques and methods of evaluation to design, model, and evaluate application designs and user interfaces.

Credit Hours: 3
Prerequisites: INFOTC 1600

INFOTC 4610: Advanced Multimedia Design and Technology
Students enrolled in INFOTC 4610 are immersed in upper level study of media technology, software, and trends in the industry, with focus on advanced media design, motion media capture techniques, portfolio development, and industry standard technology and software. Students will work both independently and in small focus groups to produce industry results in narrative, non-fiction, and commercial media design projects. This course may be taken as INFOTC 4610W for WI credit. If IT majors take this course as WI, it will serve as Capstone. This is a Study Abroad course.

Credit Hours: 3
Prerequisites: IT Majors must complete INFOTC 2610; other majors may seek instructor consent
INFOTC 4610W: Advanced Multimedia Design and Technology - Writing Intensive
Students enrolled in INFOTC 4610 are immersed in upper level study of media technology, software, and trends in the industry, with focus on advanced media design, motion media capture techniques, portfolio development, and industry standard technology and software. Students will work both independently and in small focus groups to produce industry results in narrative, non-fiction, and commercial media design projects. This course may be taken as INFOTC 4610W for WI credit. If IT majors take this course as WI, it will serve as Capstone. This is a Study Abroad course.

Credit Hours: 3
Prerequisites: IT Majors must complete INFOTC 2610; other majors may seek instructor consent

INFOTC 4630: Game Development
(same as CMP_SC 4630). The course focuses on rapid game prototyping and development utilizing the Unity game engine and C#. You will learn the fundamentals of game programming and also a platform which is actually used to make published games across multiple platforms (Mac, PC, web, iOS, Android etc). Graded on A-F basis only.

Credit Hours: 3
Prerequisites: INFOTC 3630 or CMP_SC 2050 or INFOTC 2040 with C- or higher

INFOTC 4640: Motion Graphics and Visual Effects II
This course builds on fundamentals of digital motion picture effects technology learned in Digital Effects I. Computer programs designed for digital visual special effects in film and broadcast are integrated throughout the course.

Credit Hours: 3
Prerequisites: C- or higher in INFOTC 3640

INFOTC 4650: Shader Programing
The focus of this course is modern computer graphics algorithms and programming, with an emphasis on games, shader languages, (GLSL and Cg) and Graphical Processor Units (GPUs).

Credit Hours: 3
Prerequisites: CMP_SC 2050, INFOTC 2620

INFOTC 4830: Web Application Development II
(same as CMP_SC 4830; cross-leveled with CMP_SC 7830). This course will study the science and engineering of the World Wide Web. We will study the languages, protocols, services and tools that enable the web. Emphasis will be placed on basics and technologies.

Credit Hours: 3
Prerequisites: CMP_SC 2830 with a C- or higher

INFOTC 4910: Digital Forensics
(same as CMP_SC 4910). This course introduces an overview of basic Digital Forensics procedures and techniques to enable students to perform a digital investigation of physical storage media and volume analysis, including preservation, analysis and acquisition of artifacts that resides in hard disk and random access memory, for Linux and Windows systems. Work is completed in Unix/Linux environments and in Microsoft Windows environment. Students will need to setup a virtual private infrastructure to perform multiple tasks. The course emphasizes 'learning by doing' and has a 90% hands-on and 10% theory. Much of this information consists of skills and abilities that employers want and expect in the real world of IT - in a small to medium size organization. Graded on A-F basis only.

Credit Hours: 3
Prerequisites: INFOTC 2910 and INFOTC 3910

INFOTC 4970W: Senior Capstone Design - Writing Intensive
This course is an opportunity for you to demonstrate that you have achieved the goals established by the Information Technology (IT) program. You will do this through a series of writing exercises, class activities, and a team-based project. You will demonstrate your ability to synthesize various methods and skills, apply them to new, novel, complex, and integrated project requirements in real-world IT problems. Graded on A-F basis only.

Credit Hours: 3
Prerequisites: C- or higher in INFOTC 4320, or CMP_SC 4320, or INFOTC 3650. Must have senior standing. Restricted to INFOTC majors

INFOTC 4990: Undergraduate Research in Information Technology
Research topics as defined by instructor and student.
Credit Hour: 1-6
Prerequisites: Instructor's consent

INFOTC 4995: Undergraduate Research in Information Technology - Honors
Research topics as defined by instructor and student.
Credit Hour: 1-6
Prerequisites: Instructor's consent