

# COMPUTER INFORMATION SYSTEMS (CIS)

## CIS 101 COMPUTER FUNDAMENTALS

3, 3/0

The character, organization, and use of the computer. The function of the basic components of the computer. A broad survey of application software, as well as its impact on society. Hands-on experience using common software applications such as word processing, spreadsheets, databases, and communications required. Offered every semester.

## CIS 105 INFORMATION TECHNOLOGY AND SOCIETY

3, 3/0

The impact of information technology (IT) on social, ethical, legal, economic, privacy, intellectual property, and personal issues. Contemporary issues and challenges as affected by historical IT developments (Internet, databases, networks, communications, etc.) Students use current technology to support investigations of related topics and to communicate findings. Offered every semester.

## CIS 121 INTRODUCTION TO CODING

3, 3/0; MQ23

Introduction to various topics of computer science and to develop in students the computational thinking practices of problem solving and coding within the context of problems that are relevant to the lives of today's students. Students will be exposed to programming basics using block-based graphical environment, website design, and app programming for mobile devices. Offered every semester.

## CIS 151 COMPUTER-BASED INFORMATION PROCESSING I

3, 3/0

Description of computers, concepts of languages and programming. Basic properties of computer languages such as branching, looping, array handling, subprograms and functions and their application to the solution of a variety of problems. Emphasis on structured programming language with enhancement of programming skills through use of a contemporary computer programming language to write applications programs. Prospective CIS majors must earn a minimum grade of C in this course. Required for majors. Offered every semester.

## CIS 189 TOPIC COURSE I

3, 0/0

Topics in Computer Information Systems.

## CIS 190 TOPIC COURSE II

3, 3/0

## CIS 251 COMPUTER-BASED INFORMATION PROCESSING II

3, 3/0

Prerequisite: CIS 151 or equivalent. Continuation of CIS 151. Pointers, data structures, files, lists, abstract data types, and classes. Emphasis on structured programming process using a high-level language. Required for majors. Offered every semester.

## CIS 315 COMPUTER ORGANIZATION

3, 3/0

Prerequisite: CIS 151. This course breaks the basic organization of a computer system into a hierarchy of basic levels. Examination of CPU organization, digital logic level, micro-architecture level, and parallel architectures. How each of these levels and components interact to produce a working computer system. Focus is not solely on hardware but more broadly covers the interconnection between the fundamental building blocks of a computer and the relationship between hardware and software. Required for majors. Offered every semester.

## CIS 361 FUNDAMENTAL CONCEPTS IN OBJECT-ORIENTED PROGRAMMING

3, 3/0

Prerequisite: CIS 151. An introduction to object-oriented programming. Introduces transfer students who have had the equivalent programming experience in a procedural-oriented environment to the paradigms of the object-oriented environment. Required for CIS majors who have no previous experience with object-oriented programming. Offered fall only.

## CIS 370 SYSTEMS ANALYSIS AND DESIGN

3, 3/0; IN23, RE23

Prerequisite: CIS 151. Introduction to information analysis and system design. Topics include the systems concepts, defining a system, systems analysis, hardware elements, software elements, case studies. Required for majors. Offered every semester.

## CIS 375 PROGRAMMING FOR THE INTERNET ENVIRONMENT I

3, 3/0

Prerequisite: CIS 151 or equivalent. Overview of the Internet and its components, protocols, and software. Students create and maintain Web pages to distribute and collect information and to validate user input, and write applications specifically for the Internet environment. Offered every semester.

### CIS 380 MICROCOMPUTER APPLICATIONS

3, 3/0

Prerequisite: CIS 370. Representative microcomputer software packages are used to solve advanced business application problems. Hands-on lab projects form a significant component of the course. Systematic design principles emphasized. Analytical features and data management techniques applied. Integration of data from different packages are practiced. Required for majors. Offered every semester.

### CIS 388 SERVICE LEARNING IN COMPUTING

3, 1/0

Prerequisites: CIS 151 or Instructor Permission. Students will participate in organized service-learning activities, offering coding/programming workshops for middle and high school students to address community needs. Students will enhance their academic knowledge and skills in a variety of areas of computer programming, develop technical communication skills, and foster their civic responsibility. Offered in fall and spring semesters.

### CIS 389 TOPIC COURSE

3, 0/0

Topics in Computer Information Systems.

### CIS 391 INFORMATION SYSTEMS PROJECT MANAGEMENT

3, 3/0

Prerequisite: CIS 370. An examination of current practices in Project Management as applied to Information Systems projects. Hands-on experience with the skills, tools, and techniques required in different phases of an information system project's life cycle, including project selection, project planning, project staffing and organization, task scheduling, project scope management, budgeting and progress reporting, risk management, quality management, project communications and use of appropriate project management software tools. Offered spring only.

### CIS 400 VB.NET PROGRAMMING

3, 3/0

Prerequisite: CIS 251 or CIS 361. Students gain experience with an object-oriented, event-driven programming language using a modern integrated development environment. Students write programs utilizing basic data types, control structures, multiple forms, user-defined classes, arrays, and collections and access data from forms, files, and databases. Required for majors. Offered every semester.

### CIS 410 COMPUTER OPERATING SYSTEMS

3, 3/0

Prerequisite: CIS 251 or CIS 361, CIS 315. A study of computer operating systems, their functions, components, scheduling and execution of jobs, task management, and interrupts. A comparison and exploration of contemporary operating systems is incorporated. Offered every semester.

### CIS 411 DATABASE SYSTEMS

3, 3/0; IN23

Prerequisite: CIS 370. The basic concepts and uses of data and database systems. Topics include organization, analysis, and function of database systems. Components of representative relational, network and hierarchical databases will be presented along with programming and design. Required for majors. Offered every semester.

### CIS 413 MULTIMEDIA WEB PROGRAMMING

3, 3/0

Prerequisites: CIS 251 or CIS 361, CIS 375. Integration of text, graphics, animation, and audio and video sources to create multimedia products deliverable via the World Wide Web. Programming with animation, data processing, dynamic content creation, and component manipulation. Emphasizes object-oriented capabilities of contemporary multimedia development tools, objects, methods, events, properties, and functions. Offered spring only.

### CIS 414 MULTIMEDIA METHODS, TOOLS, PROGRAMMING, AND APPLICATIONS

3, 3/0

Prerequisite: CIS 151. Various media related to the needs of CIS professionals in business and industry are examined, including digital images, video, audio, animation, and multimedia. The course includes methods and tools in the design, development, and programming of a range of digital multimedia products for a variety of professional purposes. Offered in fall semester.

### CIS 420 DATABASE MANAGEMENT SYSTEMS

3, 3/0

Prerequisite: CIS 411. Advanced concepts of database management, including data modeling, features and uses of database management systems, data and database administration, and data dictionary. Offered spring only.

### CIS 425 OBJECT-ORIENTED DEVELOPMENT

3, 3/0

Prerequisites: CIS 251 or CIS 361, CIS 370. Object-oriented approach to programming and design, including its history and rationale. Students gain hands-on programming experience using an appropriate object-oriented language. Offered fall only.

### CIS 427 E-COMMERCE SYSTEMS AND TECHNOLOGIES

3, 3/0

Prerequisites: CIS 370, CIS 375. Examines technological advancements along with business and organizational issues of electronic commerce. The technological context includes an understanding of tools and concepts such as Web servers, client/servers, communication networks, and e-commerce software. The business context includes components such as payment methods, fulfillment policies, privacy, security, and international issues. Offered spring only.

### CIS 435 COMPUTER SEMINAR

3, 3/0

Prerequisite: Permission of instructor. Selected topics from subjects not covered in formal courses. Offered occasionally.

### CIS 442 ADVANCED SYSTEMS APPLICATIONS

3, 3/0

Prerequisite: CIS 411. Information systems in complex organizations. Techniques of information systems analysis and design. Detailed study of a representative real-world information system. Case studies, group work, and oral presentations. Offered occasionally.

### CIS 461 PROGRAMMING WITH PYTHON

3, 3/0

Prerequisite: CIS 251 or CIS 361. This course will introduce students to a general-purpose, high-level programming language called Python whose design philosophy emphasizes code-readability. This course will examine Python as multi-paradigm language which can be used to develop specific purpose software. Students will develop and present a research project using Python. Offered in fall semester.

### CIS 470 DATA COMMUNICATIONS

3, 3/0

Prerequisites: CIS 151, CIS 315. A comprehensive study of data transmission, packet transmission, and internetworking concentrating on principles. Topics include, but are not limited to, underlying hardware, packet switching, Internet protocols, and network applications. Offered every semester.

### CIS 471 NETWORKING LABORATORY I

3, 1/2

Prerequisites: CIS 410, CIS 470. Hands-on experience in installing, configuring, and administering a modern operating system in a networked environment. Topics include network topologies, paradigms, protocols, services, computer security, intrusion recover and privacy. Offered fall only.

### CIS 473 ENTERPRISE SYSTEMS DESIGN AND ADMINISTRATION

3, 3/0

Prerequisites: CIS 251 or CIS 361, CIS 410, CIS 470. Knowledge and skills needed to be a successful member of an enterprise IT technology support group. Discussion includes roles, responsibilities, policies, procedures, and ethical issues. Projects include administration tasks, design issues, implementation plans, and performance-monitoring strategies. Installation and administration of enterprise-wide network hardware and software. Offered spring only.

### CIS 475 PROGRAMMING FOR THE INTERNET ENVIRONMENT II

3, 3/0

Prerequisites: CIS 251 or CIS 361, CIS 375, CIS 411. Server-side programming on the Internet. Contemporary server side-programming environment to distribute and collect information, validate user input, and provide dynamic Web content. Forms, databases, templates, cookies and session tracking and their use in dynamic site development examined. Offered fall only.

### CIS 478 INFORMATION SYSTEM SECURITY

3, 3/0

Prerequisites: CIS 410, CIS470. A survey of essential topics pertinent to modern computer, network and information security. Topics include Fundamental security concepts; Organizational risk assessment and valuation; Attack strategies for operating systems, network and web services; Mitigation techniques, system strengthening (hardening), countermeasures and trade-offs. Offered fall only.

### CIS 488 INTERNSHIP

3-15, 3/0

Prerequisites: CIS 380, upper-division status, and permission of instructor. Qualified students are placed in functioning organizations to work as trainees, on special projects or studies, or in a relevant aspect of information systems. Offered every semester.

### CIS 490 SENIOR SEMINAR

3, 3/0

Capstone Course.

### CIS 494 UNDERGRADUATE RESEARCH IN COMPUTING

3, 3/0

Prerequisites: CIS Major or Minor, Upper Division status, Instructor Permission. Introduces students to various aspects of academic and applied research in the areas of Information Technologies, Computer Information Systems and related fields. Conduct in-depth research on topic of choice with instructor permission. Possible topics include, but are not limited to, programming methodology and applications, algorithms, advanced databases and distributed systems, networking, security, data analysis and related areas. Offered spring only.

### CIS 495 SPECIAL PROJECT

1-3, 0/0

### CIS 497 SPECIAL WORKSHOP

3, 0/0

Special workshop in Computer Information Systems.

### CIS 499 INDEPENDENT STUDY

3-12, 0/0