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; MQ14
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
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
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; WIIF
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.
Equivalent Course: CIS 370W

CIS 375 PROGRAMMING FOR THE INTERNET
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 is practiced. Required for majors. Offered every semester.

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 every semester.

CIS 400 VISUAL BASIC PROGRAMMING FOR THE WINDOWS ENVIRONMENT
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 405 COMPREHENSIVE COBOL PROGRAMMING
3, 3/0
Prerequisite: CIS 251 or CIS 361. Intensive study of COBOL and its use in commercial applications, with emphasis on COBOL fundamentals and advanced features, program design and style, and file handling. Programming projects involve commercially-oriented applications programs. Offered occasionally.

CIS 410 COMPUTER OPERATING SYSTEMS
3, 3/0
Prerequisite: CIS 315. Computer operating systems, their functions, components, scheduling and execution of jobs, task management, and interrupts. A comparison and exploration of contemporary operating systems. Required for majors. Offered every semester.

CIS 411 DATABASE SYSTEMS
3, 3/0; WIIF
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.
Equivalent Course: CIS 411W

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 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. Equivalent Course: CIS 442W

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 recovery 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 RESEARCH IN COMPUTER INFORMATION
SYSTEMS
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
every semester.

CIS 495 SPECIAL PROJECT
1-3, 0/0

CIS 497 SPECIAL WORKSHOP
3, 0/0
See the Undergraduate Course Catalog (http://
catalog.buffalostate.edu/undergraduate/docs/currentugcat.pdf).

CIS 499 INDEPENDENT STUDY
3-12, 0/0