Appendix: Summary of course changes

Note: Only **changes** are listed here.

CIS 100 - Knowledgeware

Number: CIS 105

Name: Introduction to Computing

Structure: 2 hours lecture, 2 hours lab

General Education: Seeking FM designation

Course content:

- Defining Information Technology
- Exploring the Human-Computer Interface
- The Basics of Networking
- Locating Information on the Web
- Introduction to Debugging
- Representing Information Digitally
- Principles of Computer Operation
- Algorithmic Thinking and Problem-Solving
- Social Implications of Information Technology
- Privacy and Digial Security
- Limits to Computation

CIS 201 – Computer Science I

Prerequsite: MATH 151 or concurrent registration

CIS 214 – Fundamentals of Information Systems and Data Structures

Delete course

CIS 217 – Commercial Programming

Delete course

CIS 233 – Scientific Programming

Delete course

CIS 281-289 – Various language courses

Delete courses

CIS 300 – Foundations of Computer Science

Prerequisite: CIS 201

Course content:

- Logic, proof, sets and functions
- Integers and matrices
- Proofs, induction, and recursion
- Counting principles
- Discrete probability
- Recurrence relations and advanced counting
- Relations
- Graphs
- Trees

CIS 301 – Discrete Data Structures

Name: Theory of Computation

Prerequisite: CIS 203 and CIS 300

Course content:

- Summary of mathematical prerequisites
- Regular Languages
- Context-free languages
- Turing machines and the Church-Turing Thesis
- Decidability
- Reducibility

CIS 303 – Analysis of Algorithms

Name: Algorithm Analysis and Design

Prerequisite: CIS 203 and CIS 300

Course content:

- What is an algorithm?
- Measuring algorithm complexity
- Review of elementary data structures
- Algorithmic techniques: divide-and-conquer, greedy programming, and dynamic programming
- Search and traversal techniques
- Backtracking
- P and NP algorithms
- NP-hard and NP-complete problems

CIS 310 – Operating Systems and Software Engineering

Name: Operating Systems

Prerequisite: CIS 203

Content:

- What is an operating system?
- System calls
- Processes and threads
- Resource management
- Concurrency
- Scheduling
- Virtual memory
- Deadlock
- Networking and distributed systems
- Security
- Real-time systems

CSI 336 – Operations Research I

Delete course

CIS 356 – Computer Architecture

Name: Assembly Language & Comp Arch

Prerequisite: CIS 203

Content:

- Basic computer organization
- Binary representation of data
- Instructions and opcodes
- The von Neumann model
- Storage allocation
- Subroutines and parameter passing
- Port-based and memory mapped device programming
- Interrupts
- Digital circuit fundamentals
- From circuits to computation
- Pipelining and caching to improve performance

CIS 364 – Information Systems Design

Delete course

CIS 380 – Legal and Social Aspects of Computing

Name: Ethics & Professional Practice

Prerequisite: CIS 203 and Junior Standing

Course content:

- Overview of philosophy of ethics
- Professional codes of ethics
- Commerce

- Computer abuse
- Intellectual property
- Privacy and security
- Risks
- Social justice
- Social etiquette
- Professional societies
- Employment outlook
- Case studies

CIS 405 – Systems Analysis and Design

Name: Software Engineering

Prerequisite: CIS 203 and Junior Standing

Course content:

- Software life cycle
- Requirements analysis
- System specification
- Software development models
- Software design
- Object-oriented design
- Component-based architectures
- Testing and maintenance
- Software engineering metrics
- Cost estimation
- Human factors
- Includes team projects

CIS 410 – Data Communications and Software Engineering

Name: Computer Networks

Prerequisite: CIS 203 and Junior Standing

Course content:

- What is a protocol?
- Basics of network architecture
- Protocol layers and service models
- Internet application layer services: HTTP, SMTP, telnet and FTP
- Programming with TCP and UDP
- Principles of reliable data transfer
- Internet transport layer services: TCP and UDP
- Sliding window protocols and flow control
- Internet network layer services: IP, routing, broadcast and multicast, IPV6
- Link layer services: Ethernet, PPP, tunneling
- Wirelss and mobile networks
- Multimedia networking
- Network security: authentication, privacy, integrity
- Network management

CIS 420 – Information Science and Data Base Systems

Name: Data Base Systems

Prerequisite: CIS 203 and Junior Standing

Course content:

- Indexed files and access methods
- Data base architectures
- The entity-relationship model
- Introduction to relational databases
- Relational algebra
- SQL language
- Functional dependencies
- Normalizations
- Data recovery
- Concurrency
- Security, integrity, and privacy
- Optimization
- Object-oriented data base systems

CIS 421 – Artificial Intelligence and Heuristic Programming

Name: Artificial Intelligence

Prerequisite: CIS 203 and Junior Standing

CIS 436 – Operations Research II

Delete course

CIS 455 – Computer Organization

Name: Advanced Computer Architecture

CIS 490 – Computer Science Internship

Prerequisites: CIS 203 and Junior Standing

Credit range: 3-6