

# Information Technology Course Descriptions

## IT 100 Computers and Information Technology

*3 hours*

An overview of computer technology and its relation to society. Through a hands-on approach, students will learn basic concepts of computer architecture, operating systems, computer communications, software engineering, programming languages, and applications software. Students will have the opportunity to reflect on the integration of computer technology and society (past/present/future).

## IT 110 Web Development Tools

*3 hours*

This course introduces students to one or more web development tools. The specific tool(s) introduced will vary depending on the interest and needs of the students and faculty. The list of tools that may be introduced includes but is not limited to the following: Flash, Dreamweaver, Photoshop, Adobe Premiere, or 3-D Studio Max. This course may be taken multiple times provided the emphasis is different for each time enrolled.

## IT 115 Introduction to Data Science

*3 hours*

An introduction to programming in R. The development of design skills and programming style is emphasized through practice with increasingly complex data structures and programming projects. Students are introduced to several classic algorithms, functions, recursion, and R as a programming language. Prerequisites: MA 106 Pre-calculus or permission of instructor. (Spring odd years)

## IT 200 Introduction to Programming

*3 hours*

An introductory course for computer science majors. A rigorous study of problem solving using a high-level procedural language. Topics covered will include simple types, expressions, structure types, fundamental control structures, simple and formatted input and output, procedures, documentation, file manipulation, design methodologies, and debugging techniques. Students will complete several programming projects. Prerequisite: Mathematics equivalent to high school algebra.

## IT 201 Data Structures

*3 hours*

A continuation of Introduction to Programming. The improvement of design skills and programming style is emphasized through practice with increasingly complex data structures and programming projects. Students are introduced to several classic algorithms, pointers, functions, recursion, and a second programming language. Prerequisite: IT200 Introduction to Programming

## IT 210 Information Technology Systems

*3 hours*

Information Technology (IT) is a field which includes the development of systems for educational, business, and civil use. This course provides a foundation for the student of Information Technology. Various IT systems and terminology used in the field will be introduced. The systems development lifecycle, project management, and the role of IT personnel in selecting and developing new systems will be explored.

## IT 215 Data Wrangling and Visualization

*3 hours*

Students will learn to apply the R language tools to data preparation and visualization. Prerequisites: IT 115 Introduction to Data Science (Fall, odd years)

## IT 220 Programming in a Second Language

*3 hours*

This course introduces students to current languages used in web development. The specific language(s) or language applications introduced will vary depending on the interest and needs of the students and faculty. The list of languages that may be introduced includes but is not limited to the following: Visual BASIC .NET or Visual C++ .NET Implementing Web Applications; or Visual BASIC .NET or Visual C++ .NET developing XML Web Services; or Javascript; or PHP. This course may be taken multiple times provided the emphasis is different for each time enrolled. Prerequisite: IT 201 Data Structures in C++.

## IT 301 Computer Systems

*3 hours*

A study of machine organization, using assembly language. Alternative architectures, instruction formats, addressing modes, logic and arithmetic operators, and appropriate programming techniques are explored through several programming projects and lectures. Prerequisite: IT 201 Data Structures.

### **IT 315 Exploratory Data Analysis**

*3 hours*

Introduction to statistics and probability with R with attention to use these tools to perform exploratory data analyses. Prerequisites: IT 215 Data Wrangling and Visualization, MA 211: Linear Algebra, or permission of instructor. Strongly recommended: MA 462 Mathematical Theory of Statistics or equivalent. (Spring even years)

### **IT 360 Human Computer Interaction**

*3 hours*

The discipline of Information Technology (IT) requires an understanding of the user when developing IT applications and systems. This course provides a basis for learning user centered systems design and development. An introduction to the basic concepts of human-computer interaction, including human factors, performance analysis, cognitive processing, usability studies, environment, and training will be given.

### **IT 375 Junior Seminar**

*1 hour*

A colloquium-type seminar studying an advanced topic or a collection of topics. Junior computer science majors prepare for an independent senior project in computer science and select a project topic.

### **IT 401 Operating Systems**

*3 hours*

An introduction to the major concept areas of operating systems, including process, memory, device, and file systems management; concurrency; synchronization; historical development of operating systems; and system structure. Prerequisite: IT 301 Computer Systems.

### **IT 421 Database Management Systems**

*3 hours*

Levels of abstraction found in typical database management systems. A study of various models for databases. Query processing and data manipulation. Database design theory. Implementations of various models discussed. Security and integrity of system. Role of database administration. Prerequisite: IT 201 Data Structures in C++ and IT 110 Information Technology Systems.

### **IT 431 Data Communications and Computer Networks**

*3 hours*

A survey of data communications and networks. Covers practice, theory and applicable standards in the areas of transmission systems, network architectures, network controllers and virtual environments for application programs. Prerequisite: CS 301 Computer Systems.

### **IT 460 Information Security**

*3 hours*

Information Security is paramount in today's business world. This course provides an overview of the field of Information Security. Students will be exposed to security issues, practices, and tools. In addition, disaster recovery planning, security planning and threat analysis will be fully explored.

### **IT 475 Senior Project**

*2 hours (Language Intensive)*

Students will investigate an advanced topic in a field of information technology outside their classroom experience. Students will work in continual consultation with their research advisor. Regular informal oral and written updates of the project are required. The project culminates with a formally written project and a formal oral presentation of the project.

### **Special Course Options**

**295/495** Field Experience (1-4 hours)

**297** Study Abroad (12-16 hours)

**299/499** Independent Study (1-4 hours)

**388** Career Connections (3-10 hours)

**445** Readings and Research (1-4 hours)