

# CISC 3120 Design and Implementation of Software Applications I

3 hours; 3 credits

Introduction to essential topics for modern software application development: Graphical User Interface (GUI) programming and human-computer interaction; computer graphics; networks, security, and client-server computing, including web applications. Code development by example, and modification of instructor-authored code using Java, emphasizing its graphics and networking capabilities. Contemporary programming development environments and tools including Application Programming Interfaces (APIs) and Integrated Development Environments (IDEs). Students should be prepared to take Computer and Information Science 3140 in the following semester.

Prerequisite: CIS 3110

## Syllabus

### An Intensive Introduction to Java

- Compilation, Interpretation, Virtual Machines, Bytes code

- Installing and Running Java

- An Overview of the Common Elements of Java and C++

- Java-specific Material

- Primitive and reference types

- Inheritance, abstract classes, interfaces, polymorphism

- The Java API

- Arrays, the Collection classes, and iterators

- The I/O classes

### Graphic Interfaces

- Introduction

- A Tutorial for Java Applets and GUI Components

- Foundations of Human-Computer Interaction (HCI)

- User-interface Design Principles

### Graphics

- Fundamental Techniques in Graphics

  - Parameterization of the image

  - Animation using threads

- Graphics Systems

- Graphic Transformations

### Network/Web-based Programming

- Communications and Networking

- Low (socket)-level network programming

- CGI Programming

- Client-side and Server-side scripting

  - Servlets

  - Java Server Pages (JSP)