# COURSE OUTLINE

## CADD-108

## Introduction to Geographical Information Systems (GIS)

**3 Credits**

# HOWARD COMMUNITY COLLEGE

**Description**

In this course, the students will learn the concepts, basic skills and techniques for developing a Geographical Information System (GIS). This course introduces students to the tools and techniques of GIS including spatial data capture, management, and analysis; as well as cartographic output through hands-on experience using GIS software. Emphasis is placed on training in the use of technology and software in order to provide students with skills and a conceptual base on which they can apply to many applications of GIS, such as environmental assessment, analysis of natural hazards, site analysis for business and industry, criminal justice, real estate, location analysis, resource management, and land-use planning. (2 hours lecture, 2 hours lab)

**Overall Course Objectives**

Upon completion of this course, the student will be able to:

1. Create data models using the Cadd system for GIS.
2. Create data models using various database and spreadsheet software.
3. Use GIS software to create Map data.
4. Create interfaces between the various graphic and database programs.
5. Create and modify Raster data.
6. Identify the essential elements of GIS.
7. Create and modify Vector data.
8. Link satellite imagery and video to GIS.

**Major Topics**

I. GIS Concepts

- A. Basic GIS and Mapping Concepts
- B. Coordinate Systems
- C. Basic GIS/CADD Applications
- D. 3D GIS/CADD Applications
- E. Using Satellite Data

II. Developing GIS Data

- A. Introduction to GIS Planning
- B. Mapping Concepts
- C. Creating Map Data
- D. Technical GIS Applications

III. Introduction to GIS Presentations

A. GIS Presentation Concepts
B. Traditional Map Presentation Concepts
C. GIS Data Evaluation Concepts

IV. Designing a GIS System

A. System Architecture
B. Software Requirements
C. Hardware Requirements
D. Data Security Requirements

V. GIS Data Administration

A. Storage Architecture Strategies
B. Spatial Data Backup Strategies
C. Spatial Database Design
D. Capacity Planning Modeling

VI. System Implementation

A. Gis Staffing
B. System Architecture Deployment
C. Data Center Architecture
D. Business Continuance Planning

## Course Requirements

Grading/exams: Grading procedures will be determined by the individual faculty member with emphasis on the following:

Final grades will be based on lab exercises, homework, quizzes and unit test.

Writing: CAD-specific writing assignments will be assigned to students by a faculty member.

## Other Course Information

This course can be used as a three-credit CAD elective in the Computer-Aided Design program.