

## Computer-Aided Technology – Geographic Information System (AAS)

### Associate in Applied Science

Minimum of 60 credit hours

Geographic information system (GIS) technicians are in high demand. And, you could be, too, with an associate degree from Oklahoma City Community College. Essentially, GIS is a computer system designed to capture, store and manipulate geographically referenced information. It allows us to view, understand, question, interpret, and visualize data in many ways that reveal relationships, patterns and trends in the form of maps, reports, and charts. Banks, media outlets, municipalities, government agencies, oil and gas companies, scientists, researchers and engineering firms use GIS. And, these entities all rely on skilled technicians to keep up with the constant changes in technology. You could be mapping the world, with an associate degree in applied science in geographic information systems from OCCC.

### COURSE SEQUENCE

Course ID	Course Name	Credits	Type	Min GD
<b>Term 1</b>				
CS 1103	Introduction to Computers and Applications This hands-on course affords students a basic understanding of computers and their application. Upon completion of this course, the student will be able to demonstrate the ability to use a computer operating system, an office suite, productivity tools, as well as the Internet at an introductory level. Advanced Standing is available. <b>Prerequisites:</b> MATH 0103 or adequate math placement; ENGL 0203, adequate placement score, or by meeting determined placement measures	3	Major	
SCL 1001	Success in College and Life Students will learn best practices for academic, career, and personal success. Students will discover their individual strengths, interests, and values to create a personalized plan; select and utilize resources that are applicable to their growth and success; and engage as active and responsible members of the academic community. This course should be taken during a student's first semester of college work at Oklahoma City Community College and is a required course in degree plans to satisfy the Life Skills requirement. <b>Prerequisites:</b> ENGL 0106 or adequate reading/writing assessment scores	1	Life Skills	
CAT 1313	Introduction to Geographic Information System (GIS) Students will learn fundamental concepts in Geographic Information System (GIS). The student will be introduced to introductory content on typical business and technical applications, data, software, and techniques used to accomplish GIS projects. Students receive hands-on experience with global positioning system (GPS) hardware and ArcGIS software. <b>Prerequisites:</b> Math 0103 or adequate math placement; ENGL 0203, adequate placement score, or by meeting determined placement measures	3	Major	
<b>Term 2</b>				
MATH 1483	Functions and Modeling The student will demonstrate: an understanding of the general concepts of relation and function and specifically of polynomial, rational, exponential and logarithmic functions; the ability to solve systems of equations by utilizing matrices and determinants; and, the ability to solve practical problems using algebraic and digital techniques. <b>Prerequisites:</b> MATH 0313 or adequate math placement; ENGL 0203, adequate placement score, or by meeting determined placement measures	3	Gen Ed	
ENGL 1113	English Composition I	3	Gen Ed	

The student will write well-developed compositions which demonstrate the principles of unity, coherence, and organization and which contain specific details and vivid language. The students will locate library material and incorporate researched materials into compositions. **Prerequisites:** ENGL 0203, adequate placement score, or by meeting determined placement measures

CAT 1323 Introduction to Spatial Technology 3 Major

The course focuses on technologies being used to locate, inventory and analyze locations, Geographic Information Systems, Global Positioning Systems, telemetry and photogrammetry and a brief introduction to Satellite-Based Remote Sensing. **Prerequisites:** Math 0103 or adequate math placement; ENGL 0203, adequate placement score, or by meeting determined placement measures

### Term 3

CAT 1214 Computer Aided Design (CAD) 4 Major

The student will learn and demonstrate the proper use of computer-aided design software as a design tool in fields such as Engineering, Architectural and Multimedia. Emphasis will be on computer-aided design fundamentals such as creating, editing and printing of 2D computer-aided design documents. The student will demonstrate his or her understanding of the structure, use and development of computer-aided design documents by correctly creating, using and storing computer-aided design documents. **Prerequisites:** Math 0103 or adequate math placement; ENGL 0203, adequate placement score, or by meeting determined placement measures

CAT GEN OSRHE Approved Gen Ed 3 Gen Ed  
COMM Communications or English Course

Students should select one 3 credit course: ENG 1213, ENG 1233, COM 1123, or COM 2213.

### Term 4

CS 1333 Database Management Applications 3 Major

The student will use a selected database management program to create and edit database files. The student will also search, organize, and build reports, forms, and templates with the database files. **Prerequisites:** ENGL 0203, adequate placement score, or by meeting determined placement measures; MATH 0203 or adequate math placement.

MATH 1613 Trigonometry 3 Support

The student will evaluate trigonometric functions and their inverses using both degree and radian measure; graph trigonometric functions and their transformations; identify properties of trigonometric functions; verify and apply trigonometric identities; solve trigonometric equations; solve problems involving right and oblique triangles, vectors, and indirect measurement; and identify and graph polar curves. **Prerequisites:** Pre or Corequisite: MATH 1483 or MATH 1533 or adequate math placement and ENGL 0203, adequate placement score, or by meeting determined placement measures

### Term 5

CS 1143 Beginning Programming 3 Major

Designed for Computer Science majors, this course affords students a basic understanding of computer programming. Students will utilize accepted programming concepts and perform number system conversions and arithmetic. In addition, they will design and code structured modular programs using design tools such as hierarchy charts, flowcharts, and pseudocode. **Prerequisites:** ENGL 0203, adequate placement score, or by meeting determined placement measures; MATH 0313 or adequate math placement or by evaluation. § Criteria for evaluation is in division office.

GEOG 2603 World Regional Geography 3 Gen Ed

The student will examine the world's major cultural regions and determine the relationship between the physical environment and economic, social and political conditions. **Prerequisites:** None

### Term 6

CAT 2313 Introduction to Spatial Analysis 3 Major

This course is designed to expose students to various components of spatial analysis. Emphasis is placed on modeling and decision making with the use of spatial data. Upon completion, students will be able to utilize common GIS techniques to solve complex spatial problems. **Prerequisites:** Math 0203 or adequate math placement, CAT 1313 or by evaluation. § Criteria for evaluation is in division office.

FA GIS SUPP ELEC GIS Faculty Approved Support Electives 3 Support

Faculty approved electives: Any CAT, CS or ENGR Course. Also the following GEOL Courses: GEOL 1063, GEOL 1064, GEOL 1114 and other courses may be approved by the Program Faculty Advisor.

### Term 7

FA GIS SUPP ELEC	GIS Faculty Approved Support Electives	3	Support
Faculty approved electives: Any CAT, CS or ENGR Course. Also the following GEOL Courses: GEOL 1063, GEOL 1064, GEOL 1114 and other courses may be approved by the Program Faculty Advisor.			
HIST 1483	U.S. History to 1877	OR	Gen Ed
After analyzing events in American history from 1400 to 1877 in such areas as revolution, geographic and social mobility, political reform, government precedents and war, students will be able to identify patterns of present day mobility, describe governmental operations in their society and help resolve conflict in society based on the student's search for change, precedents, and conflict in the American past. A general education requirement. <b>Prerequisites:</b> ENGL 0203, adequate placement score, or by meeting determined placement measures			
HIST 1493	U.S. History 1877 to Present	3	Gen Ed
After analyzing events in American history from 1877 to the present in such areas as geographic and social mobility, political reform, government precedents and war, students will be able to identify patterns of present day mobility, describe governmental operations in their society and help resolve conflict in society based on the student's search for change, precedents, and conflict in the American past. A general education requirement. <b>Prerequisites:</b> ENGL 0203, adequate placement score, or by meeting determined placement measures			

### Term 8

CAT 2924	Design Project	4*	Major
In this capstone course of the Computer-Aided Technology Program the student will demonstrate the collected knowledge, skills and techniques acquired in the program courses by creating and presenting a representative project to a panel of students, instructors and representatives from industry. The project must be an original design of the student. The project must reflect the standards relative to the project's nature and the program emphasis. The student must assemble and create components, choose the proper presentation medium, and present the project in a professional manner. <b>Prerequisites:</b> 15 hours of CAT credits			
FA GIS SUPP ELEC	GIS Faculty Approved Support Electives	3	Support
Faculty approved electives: Any CAT, CS or ENGR Course. Also the following GEOL Courses: GEOL 1063, GEOL 1064, GEOL 1114 and other courses may be approved by the Program Faculty Advisor.			
POLSC 1113	American Federal Government	3	Gen Ed
A study of the principles, structure, processes and functions of the United States federal government. <b>Prerequisites:</b> ENGL 0203, adequate placement score, or by meeting determined placement measures			

### Term 9

CAT 2924	Design Project	*	Major
In this capstone course of the Computer-Aided Technology Program the student will demonstrate the collected knowledge, skills and techniques acquired in the program courses by creating and presenting a representative project to a panel of students, instructors and representatives from industry. The project must be an original design of the student. The project must reflect the standards relative to the project's nature and the program emphasis. The student must assemble and create components, choose the proper presentation medium, and present the project in a professional manner. <b>Prerequisites:</b> 15 hours of CAT credits			
FA GIS SUPP ELEC	GIS Faculty Approved Support Electives	3	Support
Faculty approved electives: Any CAT, CS or ENGR Course. Also the following GEOL Courses: GEOL 1063, GEOL 1064, GEOL 1114 and other courses may be approved by the Program Faculty Advisor.			

\*16-week course offered during two 8-week terms

## COURSE GROUPING

Major Courses: (26 credit hours)

Computer-Aided Technology: CAT 1214, CAT 1313, CAT 1323, CAT 2313, CAT 2924 Computer Science: CS 1103, CS 1143, CS 1333

General Education Courses: (18 credit hours)

English: ENGL 1113; \*Any course that meets Oklahoma State Regents for Higher Education requirements for a general education communications course (ENGL 1213, ENGL 1233, COM 1123, COM 2213)

Geography: GEOG 2603

History: HIST 1483 or HIST 1493

Mathematics: MATH 1483

Political Science: POLSC 1113

Life Skills Courses: (1 credit hour) Life Skills: SCL 1001

Support Courses: (15 credit hours)

Mathematics: MATH 1613; Any CAT, CS or ENGR course, Also the following GEOL courses: GEOL 1063, GEOL 1064, GEOL 1114; Other courses must be approved by the Program Faculty Advisor.

## PROGRAM NOTES

Notes: This Technical and Occupational program is designed to prepare students to enter the job force following completion. See Technical and Occupational Programs in the general information section of the catalog.

## COURSE DESCRIPTIONS

### COMPUTER SCIENCE

#### **CS 1103 - Introduction to Computers and Applications**

This hands-on course affords students a basic understanding of computers and their application. Upon completion of this course, the student will be able to demonstrate the ability to use a computer operating system, an office suite, productivity tools, as well as the Internet at an introductory level. Advanced Standing is available.

**Prerequisites:** MATH 0103 or adequate math placement; ENGL 0203, adequate placement score, or by meeting determined placement measures

**Credits:** 3

#### **CS 1143 - Beginning Programming**

Designed for Computer Science majors, this course affords students a basic understanding of computer programming. Students will utilize accepted programming concepts and perform number system conversions and arithmetic. In addition, they will design and code structured modular programs using design tools such as hierarchy charts, flowcharts, and pseudocode.

**Prerequisites:** ENGL 0203, adequate placement score, or by meeting determined placement measures; MATH 0313 or adequate math placement or by evaluation. § Criteria for evaluation is in division office.

**Credits:** 3

#### **CS 1333 - Database Management Applications**

The student will use a selected database management program to create and edit database files. The student will also search, organize, and build reports, forms, and templates with the database files.

**Prerequisites:** ENGL 0203, adequate placement score, or by meeting determined placement measures; MATH 0203 or adequate math placement.

**Credits:** 3

## COMPUTER-AIDED TECHNOLOGY

### CAT 1214 - Computer Aided Design (CAD)

The student will learn and demonstrate the proper use of computer-aided design software as a design tool in fields such as Engineering, Architectural and Multimedia. Emphasis will be on computer-aided design fundamentals such as creating, editing and printing of 2D computer-aided design documents. The student will demonstrate his or her understanding of the structure, use and development of computer-aided design documents by correctly creating, using and storing computer-aided design documents.

**Prerequisites:** Math 0103 or adequate math placement; ENGL 0203, adequate placement score, or by meeting determined placement measures

**Credits:** 4

### CAT 1313 - Introduction to Geographic Information System (GIS)

Students will learn fundamental concepts in Geographic Information System (GIS). The student will be introduced to introductory content on typical business and technical applications, data, software, and techniques used to accomplish GIS projects.

Students receive hands-on experience with global positioning system (GPS) hardware and ArcGIS software.

**Prerequisites:** Math 0103 or adequate math placement; ENGL 0203, adequate placement score, or by meeting determined placement measures

**Credits:** 3

### CAT 1323 - Introduction to Spatial Technology

The course focuses on technologies being used to locate, inventory and analyze locations, Geographic Information Systems, Global Positioning Systems, telemetry and photogrammetry and a brief introduction to Satellite-Based Remote Sensing.

**Prerequisites:** Math 0103 or adequate math placement; ENGL 0203, adequate placement score, or by meeting determined placement measures

**Credits:** 3

### CAT 2313 - Introduction to Spatial Analysis

This course is designed to expose students to various components of spatial analysis. Emphasis is placed on modeling and decision making with the use of spatial data. Upon completion, students will be able to utilize common GIS techniques to solve complex spatial problems.

**Prerequisites:** Math 0203 or adequate math placement, CAT 1313 or by evaluation. § Criteria for evaluation is in division office.

**Credits:** 3

### CAT 2924 - Design Project

In this capstone course of the Computer-Aided Technology Program the student will demonstrate the collected knowledge, skills and techniques acquired in the program courses by creating and presenting a representative project to a panel of students, instructors and representatives from industry. The project must be an original design of the student. The project must reflect the standards relative to the project's nature and the program emphasis. The student must assemble and create components, choose the proper presentation medium, and present the project in a professional manner.

**Prerequisites:** 15 hours of CAT credits

**Credits:** 4

## ELECTIVES

### CAT GEN COMM - OSRHE Approved Gen Ed Communications or English Course

Students should select one 3 credit course: ENG 1213, ENG 1233, COM 1123, or COM 2213.

**Credits:** 3

### FA GIS SUPP ELEC - GIS Faculty Approved Support Electives

Faculty approved electives: Any CAT, CS or ENGR Course. Also the following GEOL Courses: GEOL 1063, GEOL 1064, GEOL 1114 and other courses may be approved by the Program Faculty Advisor.

**Credits:** 12

## ENGLISH

### ENGL 1113 - English Composition I

The student will write well-developed compositions which demonstrate the principles of unity, coherence, and organization and which contain specific details and vivid language. The students will locate library material and incorporate researched materials into compositions.

**Prerequisites:** ENGL 0203, adequate placement score, or by meeting determined placement measures

**Credits:** 3

## GEOGRAPHY

### GEOG 2603 - World Regional Geography

The student will examine the world's major cultural regions and determine the relationship between the physical environment and economic, social and political conditions.

**Prerequisites:** None

**Credits:** 3

## HISTORY

### HIST 1483 - U.S. History to 1877

After analyzing events in American history from 1400 to 1877 in such areas as revolution, geographic and social mobility, political reform, government precedents and war, students will be able to identify patterns of present day mobility, describe governmental operations in their society and help resolve conflict in society based on the student's search for change, precedents, and conflict in the American past. A general education requirement.

**Prerequisites:** ENGL 0203, adequate placement score, or by meeting determined placement measures

**Credits:** 3

### HIST 1493 - U.S. History 1877 to Present

After analyzing events in American history from 1877 to the present in such areas as geographic and social mobility, political reform, government precedents and war, students will be able to identify patterns of present day mobility, describe governmental operations in their society and help resolve conflict in society based on the student's search for change, precedents, and conflict in the American past. A general education requirement.

**Prerequisites:** ENGL 0203, adequate placement score, or by meeting determined placement measures

**Credits:** 3

## MATHEMATICS

### MATH 1483 - Functions and Modeling

The student will demonstrate: an understanding of the general concepts of relation and function and specifically of polynomial, rational, exponential and logarithmic functions; the ability to solve systems of equations by utilizing matrices and determinants; and, the ability to solve practical problems using algebraic and digital techniques.

**Prerequisites:** MATH 0313 or adequate math placement; ENGL 0203, adequate placement score, or by meeting determined placement measures

**Credits:** 3

### MATH 1613 - Trigonometry

The student will evaluate trigonometric functions and their inverses using both degree and radian measure; graph trigonometric functions and their transformations; identify properties of trigonometric functions; verify and apply trigonometric identities; solve trigonometric equations; solve problems involving right and oblique triangles, vectors, and indirect measurement; and identify and graph polar curves.

**Prerequisites:** Pre or Corequisite: MATH 1483 or MATH 1533 or adequate math placement and ENGL 0203, adequate placement score, or by meeting determined placement measures

---

**Credits:** 3

## **POLITICAL SCIENCE**

### **POLSC 1113 - American Federal Government**

A study of the principles, structure, processes and functions of the United States federal government.

**Prerequisites:** ENGL 0203, adequate placement score, or by meeting determined placement measures

**Credits:** 3

## **SUCCESS IN COLLEGE AND LIFE**

### **SCL 1001 - Success in College and Life**

Students will learn best practices for academic, career, and personal success. Students will discover their individual strengths, interests, and values to create a personalized plan; select and utilize resources that are applicable to their growth and success; and engage as active and responsible members of the academic community. This course should be taken during a student's first semester of college work at Oklahoma City Community College and is a required course in degree plans to satisfy the Life Skills requirement.

**Prerequisites:** ENGL 0106 or adequate reading/writing assessment scores

**Credits:** 1