

## Narrative

### Geographic Information Systems Certificate of Achievement

#### Program Goals and Objectives

Our program at Moorpark will train people in the fundamental skills to be a GIS technician. It will be an eight-class sequence that is able to be completed in three semesters. Three of these classes are background classes: CS M01 Introduction to Computer Science, GEOG M01 Physical Geography, and GEOG M02L Physical Geography Lab. The two introductory classes (GIS M01 and GIS M02) will prepare students to understand cartographic techniques, geospatial data collection, and introduce GIS software. The next three classes (GIS 22, GIS 23, GIS 24) will prepare students for the workplace by giving them the advanced skills required of GIS technicians. This 22-unit sequence is pithy – dense and just long enough to adequately prepare our students for the demands of the industry.

Every modern Geography Department offers a robust set of GIS classes. It is time we joined with our neighboring colleges and met the demands of our students and community.

The Program Student Learning Outcomes are as follows:

- Design and execute a GIS project from data collection through presentation of results. The program assessment would be through Capstone applied research projects.
- Collect, access, and post-process geospatial data using field techniques and internet research. The program assessment would be through practical exams, in class exercises, and capstone applied research projects.

#### Catalog Description

The Geographic Information Systems (GIS) Certificate Program is designed to prepare students for entry-level employment in the geospatial analysis sector. Students are trained in the practical application of GIS software, importation of GIS data, display, visualization, exploration, query, analysis, and production of maps and reports.

The Program Student Learning Outcomes are as follows:

- Design and execute a GIS project from data collection through presentation of results. Program Assessment: Capstone applied research projects
- Collect, access, and post-process geospatial data using field techniques and internet research. Program Assessment: Practical exams, in class exercises, and capstone applied research projects.

## Program Requirements

The course requirements for the Geographic Information Systems Certificate of Achievement include the following courses.

### Geographic Information Systems Certificate of Achievement

Requirements	Dept. Number	Title	Units	Sequence
Require Core Complete (Eight Courses)	GEOG M01	Physical Geography	3	Yr. 1, Fall
	GEOG M01L	Physical Geography Lab	1	Yr. 1, Fall
	GIS M01	Introduction to Mapping and Geographic Information Systems (GIS)	3	Yr. 1, Spring
			3	
	GIS M02	GPS (Global Positioning Systems) and Map Analysis	3	Yr. 1, Spring
	GIS M23	Remote Sensing	3	Yr. 2, Fall
	GIS M22	Raster GIS and Spatial Analysis	3	Yr. 2, Fall
	GIS M24	Intermediate GIS Applications	3	Yr. 2, Spring
CS M01	Introduction to Computer Science		Yr. 1, Spring	
Recommended Optional Courses	BUS M31	Introduction to Management	3	Yr. 1, Fall
	CSM10P	Introduction to Computer Programming Using Python Language	4	Yr. 2, Spring
	CS M10R	Machine Learning with R Programming	2	Yr. 2, Spring
	ENGR M04	Engineering Design/CAD	3	Yr. 2, Spring
	ENSC M01	Environmental Science	3	Yr. 1, Spring
	GEOL M02	Physical Geology	3	Yr. 1, Fall
	MATH M06	Trigonometry	3	Yr. 1, Spring
MATH M15	Introductory Statistics	4	Yr. 1, Fall	

**Required Core Total: 22 units**

### Master Planning

Geographic Information Systems (GIS) are so seamlessly integrated into our 21st century lives that most of us are unaware of their existence. Every time most people get into a car, they turn on a GIS. Every time somebody searches the internet to discover a new shop or a restaurant, they engage with a GIS. In order to evaluate traffic conditions and plan their personal lives, they rely on GIS

GIS touches our daily lives in myriad ways beyond the mundane acts of navigation. Analysis of geospatial data is essential for urban planning, natural hazard mitigation, timber and other natural resource extraction, ground and surface water resource assessment, meteorology and weather forecasting, property line surveying, wildland firefighting, search and rescue operations, soil quality assessment, crop health monitoring, infectious disease tracking, crime density mapping, and transportation network planning. Nearly any planning decision involving the Earth relies on GIS.

This is why GIS technicians are in such high demand. People who are proficient in this software are needed by nearly every industry in every city and town. This is why most colleges offering career technical education programs have some form of a GIS program. Most institutions hiring GIS technicians hire people with a bachelor's degree or less, making this the ideal field for a certificate program.

There is much demand for professionals trained in GIS in our community. In our region, there were 2,185 job openings in 2017 which is projected to increase to 2,272 by 2022 – a 4.0% increase. The median starting salary for somebody in this field is \$ 38.10/hr. This demand is distributed among nearly all sectors of government and private industry. See attached preliminary LMI data for more detail. To meet this demand, most local colleges offer certificates or degrees in GIS. This list includes: Alan Hancock College, Antelope Valley College, Cuesta College, Santa Barbara City College, Pierce College, and Santa Monica City College. Nearly every CSU and UC also offers a GIS program. This is THE cornerstone of 21st century geography education.

How does this award fit in the college's existing program inventory?

While Moorpark College has a streamlined AA-T program in geography, it does not offer nearly enough training for a student to work in the field of Geographic Information Systems – a demonstrated area of need in our region. We only currently offer a single GIS class: Introduction to GIS. This is very insufficient training for anybody who actually wants to work in the field. This program will provide a well-rounded but not too-lengthy geospatial education that will make students job-ready.

Additionally, this will be the first CTE program to be offered from the Earth and Environmental Science programs at Moorpark College. It will be a much-needed step towards making our programs more responsive towards the job training needs of the community.