

**I. CATALOG INFORMATION**

- A. Discipline: GEOGRAPHIC INFORMATION SYSTEMS (GIS)
- B. Subject Code and Number: GIS M02
- C. Course Title: GPS (Global Positioning Systems) and Map Analysis

## D. Credit Course units:

Units: 3

Lecture Hours per week: 3

Lab Hours per week : 0

Variable Units : No

## E. Student Learning Hours:

Lecture Hours:

Classroom hours: 52.5 - 52.5

Laboratory/Activity Hours:

Laboratory/Activity Hours \_\_\_\_\_

**Total Combined Hours** in a 17.5 week term: 52.5 - 52.5

## F. Non-Credit Course hours per week \_\_\_\_\_

G. May be taken a total of:  1  2  3  4 time(s) for creditH. Is the course co-designated (same as) another course: No  Yes 

If YES, designate course Subject Code &amp; Number: \_\_\_\_\_

## I. Course Description:

Introduces the use of a hand-held Global Positioning System (GPS) unit in the field, the terminology, hardware, and technology. Integrates the use of the hand-held GPS unit to determine location and collect and analyze data. Includes such topics as map interpretation, spatial statistics, and cartography.

## J. Entrance Skills

\*Prerequisite: No  Yes  Course(s)

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\*Corequisite: No  Yes  Course(s)

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Limitation on Enrollment: No  Yes 

\_\_\_\_\_

Recommended Preparation: No  Yes  Course(s)GEOG M01 and GEOG M01LOther: No  Yes 

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## K. Other Catalog Information:

Aligned with C-ID: GEOG 150

## II. COURSE OBJECTIVES

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

		<b>Methods of evaluation will be consistent with, but not limited by, the following types or examples.</b>
1	demonstrate an understanding of mapping concepts and the ability to interpret maps and mapped data.	In-class exercises Homework assignments Summative abstracts about class material Practical exams Essay exams Capstone project
2	interpret displays of tabular data in spatial visualizations.	In-class exercises Homework assignments Summative abstracts about class material Practical exams Essay exams Capstone project
3	demonstrate the ability to use geographic technologies in collecting, analyzing and displaying geospatial data.	In-class exercises Homework assignments Summative abstracts about class material Practical exams Essay exams Capstone project
4	construct, evaluate, and manipulate tabular data by joining and relating databases, building queries, and classifying data for modified display.	In-class exercises Homework assignments Practical exams Capstone project
5	use GPS units for successful data collection, interface GPS units with a computer, and download field data.	In-class exercises Homework assignments Practical exams Capstone project
6	design and carry out a GPS data gathering and analysis campaign from proposal, through data collection, to presentation.	Capstone project
7	apply cartographic principles and standards to the display of	In-class exercises Homework assignments

geospatial data.	Practical exams Capstone project
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### III. COURSE CONTENT

Estimated %	Topic	Learning Outcomes
<b>Lecture</b> (must total 100%)		
20.00%	Cartographic foundations: - map formats - scale - coordinate systems - projections - geodesy	1, 3, 6, 7
10.00%	Tabular recording of field-generated data	3, 4, 5
5.00%	Interfacing GPS data with aerial imagery Aerial imagery interpretation	1, 3, 7
10.00%	GPS technology: - setting up and using GPS units - interfacing GPS units with computer - downloading and post-processing GPS data	2, 4, 5, 6
5.00%	Introduction to GPS, GIS, and the scientific method as applied to geospatial sciences	1, 2, 3, 4, 5, 6, 7
5.00%	Exporting GPS data to ArcGIS platforms	5, 6
15.00%	Tabular data in ArcGIS: - manipulating attribute tables - relating and joining tables - building queries	3, 4, 6, 7
10.00%	Classifying data for modified display	2, 3, 4, 6, 7
10.00%	Statistical analysis of tabular data	2, 3, 6, 7
10.00%	Creating charts and layouts: - selecting appropriate symbology - exporting maps from GIS	1, 2, 3, 4, 5, 6, 7

### IV. TYPICAL ASSIGNMENTS

#### A. Writing assignments

Writing assignments are required. Possible assignments may include, but are not limited to:	
1	summarize each week's lecture topic (map types, SQL queries, GPS technology, etc.) in the form of a professional abstract.
2	describe in an essay the uses and limitations of GPS technology.
3	communicate the results of an applied research project that utilizes GPS technology in the technical writing style required by the industry.
4	describe in an essay the various kinds of coordinate systems and their uses.

#### B. Appropriate outside assignments

Appropriate outside assignments are required. Possible assignments may include, but are not limited to:
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1	read technical manuals of GPS hardware.
2	visit the Santa Monica Mountains National Recreation Area and collect field data with one of their resource managers.
3	perform scavenger hunts in Google Earth that involve finding locations, evaluating gradients, and overlaying layers.

**C. Critical thinking assignments**

Critical thinking assignments are required. Possible assignments may include, but are not limited to:	
1	collect, using a GPS and field note-taking techniques, tabular point data on the utility installations on campus. Download and import these data into ArcGIS.
2	collect tabular line and polygon data on a hiking trail, mapping invasive species and the trail network by using a GPS and field note-taking techniques.
3	design, as part of the capstone project, a GPS/GIS campaign in which they evaluate a problem that can be solved with GPS data collection and map analysis. The project must include field collection of tabular data, post-processing of these data, and some kind of quantitative analysis of those data.
4	write a research proposal for a GPS campaign that includes the subject of the project, why it is important, a research timetable, a materials list, and references to background material.

**V. METHODS OF INSTRUCTION**

Methods of instruction may include, but are not limited to:

- Distance Education – When any portion of class contact hours is replaced by distance education delivery mode (Complete DE Addendum, Section XV)
- Lecture/Discussion
- Laboratory/Activity
- Other (Specify)  
 Lecture time will be interspersed with hands-on computer exercises demonstrating the topic  
 Class activities  
 Guest speakers  
 Collaborative group work
- Optional Field Trips
- Required Field Trips

**VI. METHODS OF EVALUATION**

Methods of evaluation may include, but are not limited to:

- |  |   |   |
|--|---|---|
| <input checked="" type="checkbox"/> Essay Exam           | <input checked="" type="checkbox"/> Classroom Discussion    | <input checked="" type="checkbox"/> Skill Demonstration |
| <input checked="" type="checkbox"/> Problem Solving Exam | <input checked="" type="checkbox"/> Reports/Papers/Journals | <input checked="" type="checkbox"/> Participation       |
| <input checked="" type="checkbox"/> Objective Exams      | <input checked="" type="checkbox"/> Projects                | <input checked="" type="checkbox"/> Other (specify)     |

- Capstone project in which students evaluate a problem that can be solved with advanced GIS techniques. They will access the appropriate data, post-process and analyze it, and present the results to the class.

- Quizzes

- Summative papers

**VII. REPRESENTATIVE TEXTS AND OTHER COURSE MATERIALS**

Kimerling, A. Jon, et al. Map Use: Reading Analysis, Interpretation. 8th ed. Ersi Press, 2016.

Tyner, Judith . The World of Maps: Map Reading and Interpretation for the 21st Century. Guilford, 2014.

Bolstad, Paul. GIS Fundamentals: A First Text on Geographic Information Systems. 5th ed. XanEdu, 2016.

**VIII. STUDENT MATERIALS FEES**

No  Yes

**IX. PARALLEL COURSES**

<i>College</i>	<i>Course Number</i>	<i>Course Title</i>	<i>Units</i>
Mt. Jacinto College	GEOG 105	Map Interpretation and Spatial Analysis	3
Moreno Valley College	GEG 7	Map Interpretation and Analysis	3
CSU Northridge	GEOG 108	Earth from Above	3
CSU Long Beach	GEOG 280	Introduction to Geospatial Techniques	3
Sacramento State University	GEOG 3	Introduction to Maps and Geographic Technologies	3
San Francisco State University	GEOG 203	Geographic Measurement	3
CSU Chico	GEOG 219	Introduction to Geographic Methods	3

**X. MINIMUM QUALIFICATIONS**

**Courses Requiring a Masters Degree:**  
 Master's degree in geology, geophysics, earth sciences, meteorology, oceanography, or paleontology  
 OR bachelor's degree in geology AND master's degree in geography, physics, or geochemistry OR  
 the equivalent.

**XI. ARTICULATION INFORMATION**

A. Title V Course Classification:

1. This course is designed to be taken either:

Pass/No Pass only (no letter grade possible); or

Letter grade (P/NP possible at student option)

2. Degree status:

Either  Associate Degree Applicable; or  Non-associate Degree Applicable

B. Moorpark College General Education:

1. Do you recommend this course for inclusion on the Associate Degree

General Education list?

Yes:  No:  If YES, what section(s)?

- A1 - Natural Sciences - Biological Science
- A2 - Natural Sciences - Physical Science
- B1 - Social and Behavioral Sciences - American History/Institutions
- B2 - Social and Behavioral Sciences - Other Social Behavioral Science
- C1 - Humanities - Fine or Performing Arts
- C2 - Humanities - Other Humanities
- D1 - Language and Rationality - English Composition
- D2 - Language and Rationality - Communication and Analytical Thinking
- E1 - Health/Physical Education
- E2 - PE or Dance
- F - Ethnic/Gender Studies

C. California State University(CSU) Articulation:

1. Do you recommend this course for transfer credit to CSU? Yes:  No:

2. If YES do you recommend this course for inclusion on the CSU General Education list?

Yes:  No:  If YES, which area(s)?

- |                             |                             |                             |                             |                              |                             |                             |
|-----------------------------|-----------------------------|-----------------------------|-----------------------------|------------------------------|-----------------------------|-----------------------------|
| A1 <input type="checkbox"/> | A2 <input type="checkbox"/> | A3 <input type="checkbox"/> | B1 <input type="checkbox"/> | B2 <input type="checkbox"/>  | B3 <input type="checkbox"/> | B4 <input type="checkbox"/> |
| C1 <input type="checkbox"/> | C2 <input type="checkbox"/> | D1 <input type="checkbox"/> | D2 <input type="checkbox"/> | D3 <input type="checkbox"/>  | D4 <input type="checkbox"/> | D5 <input type="checkbox"/> |
| D6 <input type="checkbox"/> | D7 <input type="checkbox"/> | D8 <input type="checkbox"/> | D9 <input type="checkbox"/> | D10 <input type="checkbox"/> | E <input type="checkbox"/>  |                             |

D. University of California (UC) Articulation:

1. Do you recommend this course for transfer to the UC? Yes:  No:

2. If YES do you recommend this course for the Intersegmental General Education Transfer Curriculum (IGETC)? Yes:  No:

IGETC Area 1: English Communication

- English Composition
- Critical Thinking-English Composition
- Oral Communication

IGETC Area 2: Mathematical Concepts and Quantitative Reasoning

- Mathematical Concepts

IGETC Area 3: Arts and Humanities

- Arts
- Humanities

IGETC Area 4: Social and Behavioral Sciences

- Anthropology and Archaeology
- Economics
- Ethnic Studies
- Gender Studies
- Geography
- History
- Interdisciplinary, Social & Behavioral Sciences
- Political Science, Government & Legal Institutions
- Psychology
- Sociology & Criminology

IGETC Area 5: Physical and Biological Sciences (mark all that apply)

- Physical Science Lab or Physical Science Lab only (non-sequence)
- Physical Science Lecture only (non-sequence)
- Biological Science
- Physical Science Courses
- Physical Science Lab or Biological Science Lab Only (non-sequence)
- Biological Science Courses
- Biological Science Lab course
- First Science course in a Special sequence
- Second Science course in a Special Sequence
- Laboratory Activity
- Physical Sciences

IGETC Area 6: Language other than English

- Languages other than English (UC Requirement Only)
- U.S. History, Constitution, and American Ideals (CSU Requirement ONLY)
- U.S. History, Constitution, and American Ideals (CSU Requirement ONLY)

**XII. REVIEW OF LIBRARY RESOURCES**

A. What planned assignment(s) will require library resources and use?

The following assignments require library resources: None

B. Are the currently held library resources sufficient to support the course assignment?

YES:  NO:

If NO, please list additional library resources needed to support this course.

### **XIII. PREREQUISITE AND/OR COREQUISITE JUSTIFICATION**

### **XIV. WORKPLACE PREPARATION**

Required for career technical courses only. A career technical course/program is one with the primary goal to prepare students for employment immediately upon course/program completion, and/or upgrading employment skills.

Detail how the course meets the Secretary of Labors Commission on the Achievement of Necessary Skills (SCANS) areas. (For a description of the competencies and skills with a listing of what students should be able to do, go to:

<http://www.ncrel.org/sdrs/areas/issues/methods/assment/as7scans.htm>)

The course will address the SCANS competency areas:

1. Resources: the students will retrieve geospatial data from governmental or academic sources, organize those data using proper data management techniques, and analyze their data according to a time schedule articulated at the start of the semester.
2. Interpersonal: the students will work in groups of 2-3 students to create and execute a data collection campaign and data analysis workflow that will answer a geospatial question in a manner that simulates a real workplace environment. Students will communicate the results of this work to the class and will, in part, be evaluated by peer-review.
3. Information: the students will use GPS technology and the Internet to acquire geospatial data sets and GIS software to analyze those data. Students will communicate the results of their analyses in written abstracts and in verbal and poster presentations.
4. Systems: the students will understand their roles as GPS and GIS technicians by setting up and executing data collection campaigns and data analysis workflows. Students will troubleshoot and modify these procedues when problems arise.
5. Technology: the students will apply GPS technology and GIS software every day in class and on every out-of-class assignment.

The course also addresses the SCANS skills and personal qualities:

1. Basic Skills: the students will use reading, writing and mathematics to access and collect geospatial data, analyze those data, and present their results to the class in a professional conference-style poster presentation. Emphasis is placed upon the technical writing and speaking style demanded by the industry.
2. Thinking Skills: the students will apply creative and critical thinking to answer geospatial questions using the tools of a GIS technician, solving problems when they arise.
3. Personal Qualities: the students will conduct themselves in a responsible, professional manner when completing an industry-level capstone project applying remote sensing tools. Projects will be completed in a timely fashion, so students must set realistic goals and manage time appropriately to meet them. During the peer-review process, students will behave in a critical, yet polite, fashion when giving feedback.

### **XV. DISTANCE LEARNING COURSE OUTLINE ADDENDUM**



GIS M02: Not Applicable

**XVI. GENERAL EDUCATION COURSE OUTLINE ADDENDUM**

GIS M02: Not Applicable

**XVII. STUDENT MATERIALS FEE ADDENDUM**

GIS M02: Not Applicable

**XVIII. REPEATABILITY JUSTIFICATION TITLE 5, SECTION 55041**

GIS M02: Not Applicable

**XIX. CURRICULUM APPROVAL**

Course Information:

Discipline: GEOGRAPHIC INFORMATION SYSTEMS (GIS)

Discipline Code and Number: GIS M02

Course Revision Category: New Course

Course Proposed By:

Originating Faculty Roger Putnam 09/27/2018

Faculty Peer: \_\_\_\_\_

Curriculum Rep: \_\_\_\_\_

Department Chair: Robert Keil 10/24/2018

Division Dean: Mary Rees 10/14/2018

Approved By:

Curriculum Chair: Jerry Mansfield 12/07/2018

Executive Vice President: \_\_\_\_\_

Articulation Officer: Letrisha Mai 11/01/2018

Librarian: Mary LaBarge 10/31/2018

Implementation Term and Year: Fall 2019

Approval Dates:

Approved by Moorpark College Curriculum Committee: 11/06/2018

Approved by Board of Trustees (if applicable): 12/11/2018

Approved by State (if applicable): 12/14/2018