

# GEOGRAPHY

## SCHOOL OF MATHEMATICS, SCIENCE, AND ENGINEERING

**DEAN:** Michael Odu, Ph.D., Office 215A, 619-482-6344

**FACULTY:** Ken Yanow, M.S., M.A.

**DEPARTMENT CHAIR:** Jeff Veal, Ph.D.

### GENERAL DESCRIPTION

Geography is a science that seeks to analyze the physical environment as well as study human influences to and interactions with the environment. Thus, this discipline examines the various physical forces that help shape the landscape and the role that humans play in the alteration of the landscape. Geography is a spatial and temporal science. A geographer will study the spatial and temporal distribution of vegetation across the globe, the physical forces leading to earthquakes and volcanoes, the historical and future arrangements of human societies across the planet, and the reasons behind differing climates from one part of the world to the next—presently, historically, and predictively. The field is strongly interdisciplinary with roots in the physical and cultural sciences.

### CAREER OPTIONS

Below is a sample of the career options available for the geography major. A few of these require an associate in science degree, most require a bachelor's degree, and some require a graduate-level degree: geographer, high school or college instructor, cartographer, weather observer, demographer, land use planner, geographic analyst, aerial photo interpreter, remote sensing specialist, land economist, climatologist, environmental scientist, geographic information system specialist, site researcher, urban planner, and soil conservationist.

### DEGREE/CERTIFICATE OPTIONS

### MAJOR CODE

#### Associate in Arts Degree: Transfer Preparation

Geography	01770
Geography (SB1440)	01775

#### Certificate of Achievement

Geospatial Technology Technician	A1772
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#### Certificates of Proficiency:

Geographic Information Science—Continuing Students and Working Professionals	01771
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Consult with a counselor to develop a Student Education Plan (SEP), which lists the courses necessary to achieve your academic goal.

*The program below is undergoing modification and the modification will be placed into an addendum upon Chancellor's Office approval - see your counselor for further information and visit the college website under <http://www.swccd.edu/catalog> link for the latest addenda updates.*

## ASSOCIATE IN ARTS DEGREE

### GEOGRAPHY



#### ASSOCIATE IN ARTS DEGREE

#### TRANSFER PREPARATION \* (MAJOR CODE: 01770)

Designed to introduce students to the department through the study of physical elements and cultural aspects of geography. Physical geography examines forces shaping the landscape including weather, soil, water bodies, and the Earth's interior. Cultural geography studies and compares location and distribution of human values such as cultures, religion, political ideologies, economics, languages, technology, population, and recreation combined to produce a cultural landscape. Regional geography concentrates on specific regions of the world, for example, California.

#### Program Student Learning Outcome Statement:

- Students will be able to communicate their understanding and analysis results by making maps, writing research papers and technical reports, giving oral presentations, and developing multimedia presentations.
- Students will develop capabilities and technical skills to apply scientific research methods (in both natural and social sciences) to observe, collect, and process geographic data; to perform analysis based on the knowledge, theories and principles in geography; and to draw quantitative and qualitative conclusions.
- Students will develop capabilities and technical skills to apply scientific research methods (in both natural and social sciences) to observe, collect, and process geographic data; to perform analysis based on the knowledge, theories and principles in geography; and to draw quantitative and qualitative conclusions. Specifically, they should be able to demonstrate: a) The capability to identify and define research problems in physical and/or human geography fields; b) The capability to draw conclusions and/or suggest solutions based on their analysis results.
- Students will be able to use written text, speech, maps, graphics, equations, and other devices to identify and describe spatial characteristics, patterns and processes at a variety of scales in physical, human, and social economic environment, including themes in atmosphere, biosphere, lithosphere, hydrosphere, population, culture, economics, settlements, and policies.



GEOG 100	Introduction to Geography—Physical Elements	3
GEOG 101	Physical Geography Laboratory	1
GEOG 120	Introduction to Geography: Cultural Elements	3
<b>Foreign Language</b>		<b>12–15</b>
<b>Total units</b>		<b>19–22</b>

In addition, it is recommended that each student take courses listed under one of the following areas of specialization.

**Methods of Geographical Analysis:** MATH 119, 130.  
**Natural Resources Environmental Analysis:** BIOL 100, 101; MATH 121 or 250; CHEM 100; PHYS120; PS 102.  
**Natural Resources Environmental Policy:** BIOL 100, 101; ECON 101 or 102; PS 102.  
**Physical Geography:** CHEM 200; MATH 121 or 250.  
**Urban and Regional Analysis:** ECON 102.

To earn an associate degree, additional general education and graduation requirements must be completed. See page 64.

- \* Students planning to transfer to a four-year college or university should complete courses specific to the transfer institution of choice. University requirements vary from institution to institution and are subject to change. Therefore, it is important to verify transfer major preparation and general education requirements through consultation with a counselor in either the Counseling Center or Transfer Center. See catalog TRANSFER COURSES INFORMATION section on page 45 for further information.

## GEOGRAPHY



**STUDENT TRANSFER  
ACHIEVEMENT REFORM (STAR)  
ACT (SB1440)**



**Associate Degree  
for Transfer**  
*A Degree with a Guarantee™*

**ASSOCIATE IN ARTS DEGREE  
TRANSFER PREPARATION \* (MAJOR CODE: 01775)**

Geography is a science that seeks to analyze the physical environment as well as study human influences to and interactions with the environment. Thus, this discipline examines the various physical forces that help shape the landscape and the role that humans play in the alteration of the landscape. Geography is a spatial and temporal science.

A geographer will study the spatial and temporal distribution of vegetation across the globe, the physical forces leading to earthquakes and volcanoes, the historical and future arrangements of human societies across the planet, and the reasons behind differing climates from one part of the world to the next—presently, historically, and predictively. The field is strongly interdisciplinary with roots in the physical and cultural sciences.

In addition, geospatial technologies, such as Geographic Information Systems (GIS), remote sensing (RS), and Global Positioning Systems (GPS) are requisite tools for the modern geographer.

### Program Student Learning Outcome Statement:

- Students will be able to define and apply major sociological concepts, theories and research methodologies to analyze a variety of social and/or cultural issues.

### REQUIRED CORE: (7 units)

GEOG 100	Introduction to Geography—Physical Elements	3
AND		
GEOG 101	Physical Geography Laboratory	1
GEOG 120	Introduction to Geography—Cultural Elements	3

### LIST A: select 2 to 3 courses (6–9 units)

**6–9**

GEOG 106	World Regional Geography (3)
GEOG 160	Geography of California (3)
GEOG 145	Introduction to Mapping and Geographic Information Science (GIS) (3)
GEOG 150	Geographic Information Science and Spatial Reasoning (3)
GEOG 130	Weather and Climate (3)

### LIST B: select two courses below or any course from List A not already used (6–8 units)

**6–8**

GEOG 152	Advanced GIS—Project Design and Applications (3)
OR	
GEOG 154	Introduction to Remote Sensing (3)
OR	
GEOG 155	Introduction to Image Analysis (3)
OR	
MATH 130	Introduction to Computer Programming (4)
AND	
MATH 119	Elementary Statistics (4)
ANTH 102	Cultural Anthropology (3)
OR	
GEOL 100	Principles of Geology (3)

### Total units

**19–24**

- \* Students planning to transfer to a four-year college or university should complete courses specific to the transfer institution of choice. University requirements vary from institution to institution and are subject to change. Therefore, it is important to verify transfer major preparation and general education requirements through consultation with a counselor in either the Counseling Center or Transfer Center. See catalog TRANSFER COURSES INFORMATION section on page 45 for further information.



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## CERTIFICATES

### GEOGRAPHIC INFORMATION SCIENCE: CONTINUING STUDENTS AND WORKING PROFESSIONALS

#### CERTIFICATE OF PROFICIENCY

##### CAREER/TECHNICAL (MAJOR CODE: 01771)

The following certificate track is designed for 1) continuing students seeking training in Geographic Information Science (GIS) for their specific discipline, and 2) working professionals seeking GIS training for their present job. The program introduces both GIS concepts and applications. Special emphasis is on hands-on experience with the hardware, software, and techniques employed in science, industry, and academia.

GIS integrates innovative tools and techniques that enables users to view and analyze temporal and spatial information in an exciting, dynamic, and productive fashion. Ultimately, a GIS helps you solve problems by looking at data in a way that is readily understood and easily shared. The ability of GIS to manage, correlate, predict, model, and share spatial information, visually and dynamically, makes GIS an essential component for any spatial discipline, including (but not limited to) geography, geology, environmental science, biology, political science, anthropology, humanities, criminal justice, health, history, education, economics, real estate, and military science.

#### Program Student Learning Outcome Statement:

- Students will be able to communicate their understanding and analysis results by making maps, writing research papers and technical reports, and developing multimedia presentations. Specifically, they should be able to demonstrate the principles of cartography and the convention of map making.
- Students will develop capabilities and technical skills to apply scientific research methods (in both natural and social sciences) to observe, collect, and process geographic data; to perform analysis based on the knowledge, theories and principles in geography; and to draw quantitative and qualitative conclusions. Specifically, they should be able to demonstrate the following: The capability to observe, collect, and process geographic data with state of the art technology, including GIS, Remote Sensing, GPS, field data collection instruments, as well as obtaining data from document and literature sources.
- Students will be able to demonstrate the capability to perform data analysis based on critical thinking skills and use of technical and quantitative methods, including GIS, Remote Sensing, modeling software, and statistical methods.
- Students will develop capabilities to perform data analysis based on critical thinking skills and use of technical and quantitative methods, including GIS, Remote Sensing, modeling software, and statistical methods.

GEOG 145	Introduction to Mapping and Geographic Information Science (GIS)	3
GEOG 150	Geographic Information Science and Spatial Reasoning	3
GEOG 152	Advanced GIS—Project Design and Applications	3
<b>Total units</b>		<b>9</b>



# GEOSPATIAL TECHNOLOGY TECHNICIAN



## CERTIFICATE OF ACHIEVEMENT

### CAREER/TECHNICAL (MAJOR CODE: A1772)

The following certificate track is designed for students seeking an entry-level position as a Geospatial Technology Technician. The program introduces both geospatial concepts and applications (including Geographic Information Systems (GIS), remote sensing, and image analysis). Special emphasis is on hands-on experience with the hardware, software, and techniques employed in science, industry, and academia. All of the core courses in this certificate track are short-track (8-weeks in length) and 100% online; the internship course (GEOG 153) will take place on campus or at a private or public entity.

Geospatial Technology integrates innovative tools and techniques that enables users to view and analyze temporal and spatial information in an exciting, dynamic, and productive fashion. Ultimately, geospatial technology (including GIS, remote sensing, and image analysis) helps one solve problems by looking at data in a way that is readily understood and easily shared. Today, a significant need exists within the workforce for personnel trained as Geospatial Technology Technicians. For further information visit <http://www.swccd.edu/~gis> or contact Professor Ken Yanow ([kyanow@swccd.edu](mailto:kyanow@swccd.edu)).

### Program Student Learning Outcome Statement:

- Students will be able to communicate their understanding and analysis results by making maps, writing research papers and technical reports, and developing multimedia presentations. Specifically, they should be able to demonstrate the principles of cartography and the convention of map making.
- Students will develop capabilities and technical skills to apply scientific research methods (in both natural and social sciences) to observe, collect, and process geographic data; to perform analysis based on the knowledge, theories and principles in geography; and to draw quantitative and qualitative conclusions. Specifically, they should be able to demonstrate the following: The capability to observe, collect, and process geographic data with state of the art technology, including GIS, Remote Sensing, GPS, field data collection instruments, as well as obtaining data from document and literature.
- Students should be able to demonstrate the capability to perform data analysis based on critical thinking skills and use of technical and quantitative methods, including GIS, Remote Sensing, modeling software, and statistical methods.

### GAINFUL EMPLOYMENT:

The U.S. Department of Education requires colleges to disclose a variety of information for any financial aid eligible program that “prepares students for gainful employment in a recognized occupation.”

Students who complete this program will have acquired the necessary analytical tools to successfully secure gainful employment in the field of study.

For more information regarding the data provided for this program and what it means to you as a student, please feel free to visit our SWC Gainful Employment website at: [www.swccd.edu/gainfulemployment](http://www.swccd.edu/gainfulemployment)

GEOG 145	Introduction to Mapping and Geographic Information Systems (GIS)	3
GEOG 150	Exploring Our World—Maps and Geospatial Science	3
GEOG 152	GIS—Project Design and Applications	3
GEOG 154	Introduction to Remote Sensing (3) OR	3
PHS 154	Introduction to Remote Sensing (3)	3
GEOG 155	Introduction to Image Analysis (3) OR	3
PHS 155	Introduction to Image Analysis (3)	3
GEOG 153	GIS Internship	3
<b>Total units</b>		<b>18</b>

## GEOLOGY

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### GENERAL DESCRIPTION

Geology is the study of the composition, structure, and evolution of the Earth. It is an interdisciplinary science that combines geological observations and concepts with those of biology, chemistry, physics, and mathematics. This department explores rocks, minerals, fossils, and geologic principles and the processes such as plate tectonics, continental drift, and rock forming that continue to shape the Earth and its environments. Specialization within the field of geology ranges from engineering and geophysics to paleontology and marine geology.

### CAREER OPTIONS

Below is a sample of the career options available for the geology major. A few of these require an associate in science degree, most require a bachelor's degree, and some require a graduate-level degree: geologist, soils engineer, geological technician, earth science teacher, college instructor, geophysicist, park ranger, land use planner, geochemist, astrogeologist, marine geologist, glacial geologist, mining geologist, photogeologist, oil and gas geologist, mineralogist, paleontologist, volcanologist, and seismologist.

