

## **Department of Geography GIS Certificate Program**

**Coordinators:** Dr. Yifei Sun and Dr. Eugene Turner

### **Eligibility**

This program was developed with two intended groups in mind.

1. Currently enrolled students who wish to focus their training and skills for a career in GIS.
2. Currently employed persons who need or wish to enhance their knowledge of GIS for better understanding or to support their current job activities.

### **Admission Requirements**

1. Applicants must apply for admission to the program after consultation with certificate coordinators.
2. Geography majors may use this certificate program to fulfill the Cartography and GIS specialization within the major.
3. Admission to the program is open to other currently enrolled qualified university students.
4. Non-university students may enroll in the program through Continuing Education. See catalog for eligibility requirements to the Extended Learning Program.

### **How To Register**

1. Complete the GIS Certificate Program Application form. You can download and print this form. [www.csun.edu/geography/HTML/certificate\\_application.pdf](http://www.csun.edu/geography/HTML/certificate_application.pdf)
2. Make an appointment with one of the GIS Certificate Program Advisors
3. Apply to the University. For information and application forms, please contact:

CSUN regular admission (818) 677-3700 or visit the website [www.csun.edu/a&r](http://www.csun.edu/a&r)  
or

CSUN Extension at (818) 677-2786 or visit the website [www.csun.edu/exl](http://www.csun.edu/exl)

The GIS Certificate Program is operating through the Geography Department.

4. Register for classes.
5. Attend classes and maintain an overall 3.0 grade point average.

### **Program Requirements**

1. Must complete five, one semester courses (15 units)
2. Must maintain an overall 3.0 grade point average calculated for all five elected courses. Courses may not be taken credit/no credit.
3. Must complete all courses within seven years of enrolling in the program at CSUN.
4. No more than 3 units may come from transfer credits.
5. Participate in an annual review of progress with an advisor and a summary review at the completion of coursework.

### **Certificate Course**

All the following courses are currently available. The following three listed in the recommended order will serve as the core of the curriculum.

Geog 305/305L – Maps and Graphics  
Geog 306/306L – Intermediate GIS  
Geog 406/406L – Advanced GIS

Students must also select two courses listed below.

Geog 407/407L – Remote Sensing  
Geog 408/408L – Applications in GIS  
Geog 409/409L – Computer Mapping  
Geog 460/460L – Spatial Analysis  
Geog 497F – Techniques (Must be GIS/Cartography/Remote Sensing topic)

Currently enrolled graduate students may also select one of the following courses:

Geog 690D – Graduate Seminar in Remote Sensing  
Geog 690F – Graduate Seminar in Methods GIS  
Geog 690G – Graduate Seminar in Applications in GIS

### **Evaluation Criteria**

The instructors in each class will evaluate participants. Outcomes will be measured by exams and laboratory exercises. Normally the results of projects will result in maps and other graphics demonstrating mastery of concepts, techniques, and software.

## **Courses**

### **Geog 305(1) / 305L (2) Maps and Graphics, Laboratory**

The design, use and preparation of maps and graphs. Students will be introduced to the use of the computer for the access of data for mapping and for the preparation of maps. Topics will focus on the design, use, and preparation of maps and graphs. (1 hour lecture, 6 hours laboratory)

### **Geog 306 (1) / 306L (2) Intermediate Geographical Information Science, Laboratory**

This course will cover principles of geographic data acquisition, processing, and display through digital methods. Students will be introduced to spatial data structures and grid-based applications of GIS. (1 hour lecture, 6 hours laboratory)

### **Geog 406 (1) / 406L (2) Advanced Geographical Information Science**

This course will cover advanced topics in geographical information science. Students will investigate geographic data structures, database design, algorithms for spatial data analysis, and implementation and management issues associated with geographical information systems. Laboratories will demonstrate these issues through the use of Arcinfo software. (1 hour lecture, 6 hours laboratory)

### **Geog 407 (2) / 407L (1) Remote Sensing, Laboratory**

A problem oriented course emphasizing the techniques application on imagery recorded in non-visible segments of the electromagnetic spectrum. This includes infrared, near infrared and radar imagery from aircraft and satellite platforms. (2 hours lecture, 3 hours laboratory)

### **Geog 408 (1) / 408L (2) Applications in Geographical Information Science, Laboratory**

Advanced applications of geographical information systems. Examples include analysis of crime patterns, patterns of disease and health care delivery, population and housing characteristics, utility management, environmental hazards, animal and plant species distributions, distributions of archaeological sites, market area analysis, mineral exploration, voting behavior and redistricting, forest inventory and management, and vehicle navigation. In some cases projects may result in the development of customized applications of software through the addition of new functions. (1 hour lecture, 6 hours laboratory)

### **Geog 409(2) / 409L (1) Computer Mapping, Laboratory**

The design, use and preparation of graphs, diagrams, and maps with computers. Students will be presented with advanced topics on map design that they will be expected to employ in the preparation of a final project. Labs will introduce Adobe Illustrator,

elevation modeling software, and animation software. (2 hours lecture, 3 hours laboratory)

**Geog 460 (2) / 406L (1) Spatial Analysis**

Statistical analysis of quantitative data by areas. Measurement of aggregation and concentration, description of areal distribution and gradients, significance of similarities and differences. ( 2 hours lecture, 2 hours laboratory)

**Geog 497F (3) Techniques**

**Geog 690D (3) Graduate Seminar in Remote Sensing**

**Geog 690F (3) Graduate Seminar in Methods in GIS**

**Geog 690G (3) Graduate Seminar in Applications in GIS**

Any questions regarding the revised GIS Certificate Program should be directed to either Dr. Sun or Dr. Turner