

Geomatics Engineering

Mission Statement

The Geomatics Engineering Program seeks to provide an educational experience that enriches students' lives. The program gives background in the necessary discipline-related knowledge and skills so that geomatics engineering students are prepared to enhance the profession and protect the health and welfare of the public. The program also prepares students to expand the base of geomatics knowledge through research and scholarship.

Educational Objectives

1. The graduates of the Geomatics Engineering (GME) program should demonstrate competency in one or more of the following GME competency areas: boundary/land surveying, photogrammetry, geodesy, GIS, and digital mapping.
2. The graduates of the GME program should demonstrate continued capacity for employment in one or more GME specialty area.
3. The graduates of the GME program shall demonstrate capacity for graduate education.
4. The graduates of the GME program shall demonstrate continued membership in professional organizations.
5. The graduates of the GME program shall demonstrate a continuing commitment to lifelong learning.

6. The graduates of the GME program shall demonstrate a continuing commitment to serving and protecting the health and welfare of the public..
7. The graduates of the GME program shall demonstrate an ability to pass professional licensing or certification examinations after achieving requisite professional experience.

The Field of Geomatics Engineering

Geomatics engineering is one of the newest and most dynamic engineering disciplines. The geomatics engineer manages the global spatial infrastructure by measuring, locating, mapping, and positioning our society with respect to the ground.

The Curriculum

The geomatics engineering curriculum provides the student with a unique blend of practical and theoretical knowledge. The practical skills acquired in the program prepare the new graduate to be a valuable employee, ready to contribute to job-related activities. The theoretical skills learned at the university equip the graduate to adapt to technological advances as they occur throughout the future. Geomatics engineering students are virtually guaranteed summer work in meaningful geomatics activities.

Options Available

Within the Geomatics Engineering Program, the student may elect to focus on one or more of the following areas: boundary, geographic information systems, photogrammetry, programming, or geodesy.

Careers in Geomatics Engineering

Unlimited career opportunities await the geomatics engineering graduate. More than half of all geomatics engineering graduates are employed by geomatics or engineering/geomatics consulting firms. Many graduates find work with federal, state, or local government agencies. A fair number of additional geomatics engineering graduates move into management positions, or establish their own businesses after attaining professional land surveying licensure.

Future Education

The bachelor's degree in geomatics engineering should prepare the student for graduate school at any university with a geomatics engineering or related engineering curriculum.

Students who successfully pass the Fundamentals of Land Surveying (FLS) examination before completing a degree will be allowed to sit for the California Land Surveying Examination after they complete two years of responsible land surveying training.

Geomatics graduates are encouraged to participate in

**California State
University, Fresno**
**Department of Civil
and Geomatics
Engineering**
559.278.4828

**B.S. in Geomatics
Engineering**

**M.S. in Civil
Engineering
Geomatics Focus**

FRESNO STATE

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Geomatics Engineering

lifelong learning, both to benefit themselves professionally and to provide society with efficient and effective geomatics engineering products.

General Preparation

The basic skills and characteristics needed for success in the geomatics engineering major include an aptitude for geography, computers, mathematics, and science. Written and oral communication skills are important. A love of maps is an important indicator for future geomatics engineers.

High School Preparation

Students should meet California State University's admission requirements in terms of college preparatory course requirements, grade point average, and test scores. Additional recommended courses are advanced mathematics, chemistry and physics, computer drafting, and computer programming.

College Program

Students should consult the university's *General Catalog* for specific geomatics engineering and university requirements and for design and other acceptable technical courses.

General Education

Students should satisfy the specific General Education program requirements as outlined and listed within the geomatics engineering curriculum in the university's *General Catalog*.

Course Requirements

Since program changes occur, students should consult the *General Catalog* and a Fresno State adviser prior to registering for courses.

Lower Division

Freshman-Sophomore level courses (may be taken at a community college, if offered)

Introduction to Geomatics Engineering (GME 1)

Engineering Surveying (GME 15)

Engineering Surveying Laboratory (GME 15L)

Municipal Surveying (GME 16)

Municipal Surveying Laboratory (GME 161)

Survey Computations (GME 34)

Route and Construction Geomatics (GME 40)

Land Surveying (GME 50)

Microcomputers in Geomatics Engineering (GME 61)

Computer Aided Mapping (GME 66)

Waves and Optics (GME 23L)

CHEM 3A/ MATH 75, 76, 77 (see catalog)

Earth and Environmental Sciences 1

Physics 4A, 4AL, 4B (see catalog)

Biology 10

Upper Division

Junior-Senior level courses
(to be taken at Fresno State)

Geodetic Surveying (GME 102)

Geodesy (GME 108)

Stereo-Photogrammetry (GME 123)

Analytical Photogrammetry (GME 125)

Digital Mapping (GME 126)

Advanced Survey Computations (GME 135)

Boundary Control and Legal Principles (GME 151)

Subdivision Design (GME 159)

Geographic Information Systems (GME 173)

Senior Project (GME 180)

Project Design (GME 181)

Contemporary Conflicts of Morals (PHIL 120)

International Politics (PL SI 120)

Construction Engineering (CE 161)

Transportation Engineering (CE 150)

Required Technical Design Courses

Select two courses from the following list of four:

Geopositioning (GME 145)

Advanced Boundary Law (GME 153)

Data Interface Design (GME 161)

GIS Design Problems (GME 175)

Technical Courses

Select one course from the following list:

Land and Society (GME 100)

Green Design/Creative Thinking (GME 101)

Navigational Systems (GME 114)

Earth Resources Geomatics (GME 140)

Real Property Descriptions (GME 152)

GIS Applications (GME 174)

Independent Study (GME 190)

Topics in Geomatics Engineering (GME 191T)

See catalog for additional possible selections.

For additional information, write

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Department of Civil and Geomatics Engineering

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PLEASE NOTE: This document is for general informational purposes only. The information is subject to change; consult the appropriate department or an academic adviser. Entering freshmen must follow the revised General Education program effective fall 1999 and thereafter. The university catalog and schedule of courses are available online at www.fresnostate.edu/ClassSchedule and www.fresnostate.edu/catalog.

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