GEOMATICs - Bachelor of Science in Geomatics

Geomatics (previously known as Surveying Engineering) in the College of Engineering at NMSU will emphasize the techniques and science of measuring the terrestrial and three-dimensional position of points on, above, and below the earth’s surface and the distance and angles between them at a high level of precision to aid in the design of infrastructure including roads, bridges and legal boundaries for ownership as well as to meet the educational requirements for employment in industry and registration as a Professional Land Surveyor in the State of New Mexico.

When performing this work, professionals must have an understanding of: the science of geomatics measurement and analysis; the legal principles of boundary location; the laws related to boundaries and land use; and applicable mathematical and computational theories and principles. Geomatics professionals may work for private surveying, construction, and engineering firms, for City, County, State or Federal Highway Departments, for State Lands Commissions, for the US Forest Service and for the US Bureau of Land Management as examples.

The mission of the Department of ETSE is to provide men and women with the rigorous, fundamental education needed to enter and succeed in the Geomatics and related professions. To accomplish this mission, the department will introduce students to the theory and application of recognized geomatics principles.

Requirements (120 Credits)

General Education
State of New Mexico Common Core
Area I: Communications
ENGL 111G Rhetoric and Composition 4
Written Communications Elective (ENGL 218G Recommended) 3
Area II: Mathematics
MATH 191G Calculus and Analytic Geometry I 4
Laboratory Sciences
PHYS 215G Engineering Physics I 3
or PHYS 211G General Physics I
PHYS 215GL Engineering Physics I Laboratory 1
or PHYS 211GL General Physics I Laboratory
PHYS 216G Engineering Physics II 3
or PHYS 212G General Physics II
PHYS 216GL Engineering Physics II Laboratory 1
or PHYS 212GL General Physics II Laboratory
Choose from GEOL 111G, GEOL 212G, GEOG 111G, C S 171G, ASTR 110G, ASTR 105G
Areas IV & V: Social and Behavioral Sciences & Humanities and Fine Arts: Select 15 total credits from Area IV and V, with at least 6 credits from each area:
Area IV: Social and Behavioral Sciences: (ECON 251G or 252G recommended)
Area V: Humanities and Fine Arts:

Two Viewing a Wider World (VWW) Electives (must be from two different colleges) 6
PHIL 323V Engineering Ethics (required or equivalent Ethics course)

Program Specific Requirements
Mathematics
MATH 192G Calculus and Analytic Geometry II 4
MATH 280 Introduction to Linear Algebra 3
or MATH 480 Matrix Theory and Applied Linear Algebra
STAT 371 Statistics for Engineers and Scientists I 3
or A ST 311 Statistical Applications

Technical
ENGR 100 Introduction to Engineering 3
DRFT 109 Computer Drafting Fundamentals 3
or DRFT 153 Survey Drafting Applications
BLAW 325 Real Estate Principles and Law I 3
or BLAW 316 Legal Environment of Business
E T 262 Software Technology I 3
or OECS 192 C++ Programming I

Surveying Engineering
SUR 222 Plane Surveying 3
or DRFT 222 Surveying Fundamentals
SUR 264 Introduction to LIS 3
or GEOG 381 Cartography and Geographic Information Systems
SUR 285 Precise Digital Mapping 3
SUR 312 Legal Principles and Boundary Law I 3
SUR 328 Construction Surveying & Automation Technologies 3
SUR 322 Laser Scanning Mapping Technologies 3
SUR 351 Introductory Spatial Data Adjustment I 3
or GEOG 381 Cartography and Geographic Information Systems
SUR 361 Introduction to Geodesy/Geodetic Control Surveying 3
SUR 451 Advanced Survey Measurements, Analysis, and Adjustments 3
SUR 452 Spatial Data Integration and Analysis 3
SUR 461 GNSS Positioning 3
SUR 464 Legal Principles and Boundary Law II 3
SUR 498 Emerging Technology in Geomatics 3
GEOG 481 Fundamentals of Geographic Information Science and Technology (GIS & T) 4
IE 451 Engineering Economy 3
or E T 421 Senior Project 2

Total Credits 120

1 See the required courses (http://catalogs.nmsu.edu/nmsu/essential-information-students/general-education-courses) section of the catalog for a full list of courses.