

- to instill in our students an understanding of their professional and ethical responsibilities.

Graduation Requirements

In addition to the NMSU requirements for graduation, a student must obtain a minimum grade of C in mechanical engineering courses.

Requirements (Total credits 129)

Freshman Year (32 credits)

CHEM 111, General Chemistry I, and CHEM 112, Chemistry II.....	8
ENGL 111G, Rhetoric and Composition.....	4
ENGL 218G, Technical and Scientific Communication	3
MATH 191, 192, Calculus and Analytic Geometry I, II.....	6
M E 102, Mechanical Engineering Orientation	1
M E 159, Graphical Communication and Design.....	2
M E 166, Introduction to Mechanical Engineering	2
M E 222, Product Development/ Laboratory.....	3
Approved General Education Literature and Fine Arts elective.....	3

Sophomore Year (33 credits)

C E 301, Mechanics of Materials.....	3
COMM 265G, Principles of Human Communication	3
E E 201, Networks I.....	3
MATH 291, Calculus and Analytic Geometry III.....	3
MATH 392, Differential Equations.....	3
M E 236, Engineering Mechanics I.....	3
M E 237, Engineering Mechanics II.....	3
M E 240, Thermodynamics.....	3
M E 260, Mechanical Engineering Problem Solving.....	3
PHYS 215, Engineering Physics I.....	3
PHYS 216, Engineering Physics II.....	3

Junior Year (33 credits)

CH E 361, Engineering Materials.....	3
ECON 251G, Principles of Macroeconomics, or ECON 252G, Principles of Microeconomics.....	3
M E 328, Engineering Analysis I.....	3
M E 338, Fluid Mechanics.....	3
M E 340, Applied Thermodynamics	3
M E 345, Experimental Methods I.....	3
M E 329, Engineering Analysis II.....	3
M E 326, Mechanical Design.....	3
M E 341, Heat Transfer	3
Approved General Education History elective	3
Approved Mechanics elective*.....	3

Senior Year (31 credits)

M E 425, Design of Machine Elements.....	3
M E 426, Design Project Laboratory I.....	3
M E 427, Design Project Laboratory II.....	3
M E 445, Experimental Methods II.....	3
M E 449, Mechanical Engineering Senior Seminar.....	1
Approved General Education Human Thought and Behavior elective.....	3
Approved General Education Viewing a Wider World elective	3
Approved General Education Viewing a Wider World ECON elective.....	3
Mathematics elective**.....	3
Mechanical engineering electives***.....	6

*Mechanics elective must be taken from M E 331, 332, or 333.

**Mathematics electives must be taken from MATH 391, 471, 472, 473, 480,

STAT 371, or I E 310.

***Students in their senior year choose 6 credits of M E electives.

SURVEYING ENGINEERING

Associate Professor Steven Frank*, department head

Professor Reilly (emeritus); Associate Professor Burkholder**, Assistant

Professor Wurml***, Adjunct Professors Maestas*

(505) 646-5375

*Licensed Professional Surveyor in New Mexico

**Licensed Professional Surveyor and Professional Engineer in New Mexico

***Licensed Professional Surveyor and in a state other than New Mexico

DEGREE: Bachelor of Science in Surveying Engineering

MINOR: Surveying Engineering

Surveying Engineering involves the application of knowledge to the analysis, design, and execution of surveying and mapping projects and the design of land mapping and information systems. Surveyors rely on an understanding of the science of surveying 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 when performing this work. Positional accuracy, land planning and development concepts pertinent to subdivision of land and property surveys, land record and land tenure concepts, as well as earth-related sciences such as geodesy are each a part of professional surveying. Surveying Engineers work for private surveying or 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.

The mission of the Department of Surveying Engineering is to provide men and women with the rigorous, fundamental education needed to enter and succeed in the surveying and surveying-related professions.

To accomplish this mission, the surveying engineering department will introduce students to the theory and application of recognized surveying principles. Graduates of the program will

- acquire a sound and fundamental understanding of the scientific, mathematical, and engineering principles underlying technology;
- acquire a breadth and depth of education to understand the economic, legal, political, and social context of surveying activities;
- develop the ability to appropriately collect, analyze, interpret, and apply survey and survey-related data;
- develop the ability to recognize, analyze, and solve survey and survey-related problems;
- acquire the verbal and written skills necessary to contribute productively to society;
- acquire an understanding of responsibilities and ethics of surveying professionals;
- develop the ability to work on interdisciplinary teams; and
- recognize the need for and develop the ability to engage in life-long study and learning.

DEGREE: Bachelor of Science in Surveying Engineering (Total Credits 130)

Math and Science Courses (31 credits)

CHEM 111, General Chemistry I.....	4
GEOL 111G, Survey of Geology, or G EN 260, Geology for Engineers.....	4
MATH 191, Calculus I.....	3
MATH 192, Calculus II.....	3
MATH 280, Linear Algebra.....	3
PHYS 215, Engineering Physics I.....	3
PHYS 215L, Engineering Physics I Lab.....	1
STAT 371, Statistics for Engineers and Scientists I.....	3
Math elective ¹	3
Physics elective ²	4

General Education Coursework (31 credits)

COMM 265G, Principles of Human Communication, or COMM 253G, Public Speaking.....	3
ECON 251G, Principles of Macroeconomics, or ECON 252G, Principles of Microeconomics.....	3
ENGL 111G, Rhetoric and Composition.....	4
ENGL 218G, Technical Communication.....	3
Critical Thinking /Analysis elective	3
History elective.....	3
Human Thought and Behavior elective	3
Literature or Fine Arts elective.....	3
Viewing a Wider World electives ³	6

Surveying Engineering Coursework (49 credits)

SUR 222, Plane Surveying	3
SUR 285, Photogrammetry.....	3
SUR 292, Public Land Survey System Boundaries	3
SUR 312, Legal Principles of Boundary Surveying	3
SUR 328, Principles and Practices of Construction Surveying	3
SUR 330, Computer Applications of Surveying.....	3
SUR 351, Introductory Survey Measurements, Analysis, and Adjustments.....	3
SUR 361, Introduction to Geodesy	3
SUR 401, Ethics and Professionalism in Surveying and Mapping.....	3
SUR 450, Senior Project.....	1
SUR 451, Advanced Survey Measurements, Analysis, and Measurements ...	3
SUR 452, Land Development Design	3
SUR 461, Introduction to Satellite Geodesy.....	3
Engineering electives ⁴	9
Senior elective ⁵	3

Other Coursework (19 credits)

C E 451, Engineering Economy and Law, or I E 451, Engineering Economy	3
C S 167, C Programming, or E E 161, Computer-Aided Problem Solving	3
GEOG 381, Cartography and GIS.....	3
OEDG 109, Computer Drafting Fundamentals	3

SUR 101, Introduction to Surveying	1
Electives	6

¹ Mathematics electives: MATH 291, MATH 377, MATH 391, MATH 392, or MATH 480

² Physics electives: PHYS 216 and PHYS 216L; PHYS 217 and PHYS 217L

³ One Viewing a Wider World elective should come from the College of Business Administration and Economics

⁴ Approved Surveying or Engineering courses

⁵ Senior electives: SUR 410, SUR 412, SUR 462, SUR 464, and SUR 485

⁶ Approved Surveying or Engineering courses, approved business courses, or approved technical courses. Credits should be upper division.

MINOR: Surveying Engineering (24 credits)

GEOG 381, Cartography and Geographic Information Systems	3
SUR 222, Plane Surveying	3
SUR 285, Photogrammetry.....	3
SUR 292, Public Lands Survey System Boundaries	3
SUR 312, Legal Principles of Boundary Surveying	3
SUR 328, Principles and Practices of Construction Surveying (may be substituted by SUR 354, Advanced Plane Surveying).....	3
SUR 361, Introduction to Geodesy	3