

CHEMICAL ENGINEERING

Associate Professor Martha C. Mitchell*, Department Head
Professor Richard L. Long**, Associate Department Head

Professors Long[#], Johnson, Ghassemi, Munson-McGee, Patton (emeritus), Rockstraw*, Roubicek (emeritus); **Associate Professors** Andersen, Deng, Mitchell*; **College Professor** Del Valle*

(505)646-1214

*Registered Professional Engineer (NM)

#Registered Professional Engineer (State other than NM)

DEGREE: Bachelor of Science in Chemical Engineering

Chemical Engineers combine their knowledge of science, mathematics, and physics with their expertise in engineering analysis to solve industry-level problems in both the private and public sectors. An undergraduate degree leads to an exciting career in fields such as computer chip manufacturing; environmental restoration and pollution prevention; biotechnology and bio-engineering; pharmaceutical manufacturing; food production; transportation (including automotive and aerospace); advanced materials; petrochemical and refining; chemical synthesis and production; power and energy production (including the nuclear industry); law, medicine or advanced studies at the graduate level.

In support to the mission of New Mexico State University, the department of Chemical Engineering strives to prepare Chemical Engineering Bachelor of Science graduates to successfully and safely practice the chemical engineering profession, to engage in life-long personal and professional development, and to contribute to the betterment of their community and society.

To accomplish this mission, the department supports the objectives of the college and the university and expands the objectives to satisfy the needs of the Chemical Engineering constituent groups. The department strives to achieve the objectives of providing all graduating B.S. students with:

1. A solid foundation in the fundamentals of chemical engineering science, design, and practice;
2. A sound base in chemistry, mathematics, and physics;
3. An opportunity to explore advanced disciplines pertinent to career choice;
4. An opportunity to participate on multidisciplinary teams;
5. The opportunity and training to develop the written and oral communication skills required of a practicing engineer;
6. The opportunity to develop and comprehend professional and ethical behavior, to develop and understanding of the humanities and social sciences, and to develop the skills to engage in lifelong learning.

These objectives are consistent with those of the College of Engineering and New Mexico State University in their commitment to developing student excellence in an intellectually stimulating environment, cultural diversity, and broad education programs, while encouraging individual expression, professional behavior, civic responsibility, leadership, and an appreciation for continuing education.

The bachelor's program in Chemical Engineering has been continuously accredited by ABET since 1967.

Requirements (Total credits 133)

In addition to satisfying the requirements of the university and the College of Engineering, all majors must pass departmental courses with a grade of C or better

State General Education Common Core (37 credits)

Area I: Communications (10 credits)

ENGL 111 Rhetoric and Composition	4
Written Communications Electives ¹	3
Oral Communications Elective ¹	3

Area II: Mathematics (4 credits)

MATH 191 Calculus I	4
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Area III: Natural Science (8 credits)

CHEM 115 Principles of Chemistry I	4
CHEM 116 Principles of Chemistry II	4

Area IV: Social & Behavioral Sciences (6-9 credits*)

Economics, Political Science, Psychology, Sociology, and Anthropology electives ¹	6-9*
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Area V: Humanities & Fine Arts (6-9 credits*)

History, Philosophy, Literature, Art, Music, Dance, Theater, Foreign Language, and Religion electives ¹	6-9*
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* Students must complete 15 total credits from Area IV and V, with at least 6 credits from each area.

Institution Specific Graduation Requirements (6 credits)

Viewing a Wider World Elective ¹	6
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Program Specific Graduation Requirements (93 credits)

Mathematics (10 credits)

MATH 192 Calculus II	4
MATH 291 Calculus III	3
MATH 392 Differential Equations	3

Natural Science (20 credits)

PHYS 215 Engineering Physics I	3
PHYS 216 Engineering Physics II	3
CHEM 313 Organic Chemistry I	3
CHEM 314 Organic Chemistry II	3
CHEM 315 Organic Chemistry Laboratory	2
CHEM 433, 434 or 456 Physical Chemistry Elective	3
Natural Science Elective ¹	3

Related Engineering (9 credits)

EE 201 Networks I	3
ME 236 Engineering Mechanics I	3
Engineering Elective ¹	3

Chemical Engineering (54 credits)

CHE 100 Basics of Chemical Engineering	1
CHE 111 Intro to Computer Calcs. in Chemical Engineering	3
CHE 201 Material and Energy Balances	4
CHE 301 Chemical Engineering Thermodynamics I	3
CHE 302 Chemical Engineering Thermodynamics II	3
CHE 305 Transport Operations I: Fluid Flow	3
CHE 306 Transport Operations II: Heat and Mass Transfer	3
CHE 307 Transport Operations III: Staged Operations	3
CHE 311 Engineering Data Analysis	3
CHE 315L Process Instrumentation Laboratory	2
CHE 361 Engineering Materials	3
CHE 407L Transport Operations Laboratory	2
CHE 412 Process Dynamics and Control	3
CHE 422L Unit Operations and Process Control Laboratory	2
CHE 441 Chemical Kinetics and Reactor Engineering I	3
CHE 451 Engineering Economy	3
CHE 452 Process Design, Analysis, and Simulation	4
CHE 455 Plant Design	2
CHE 490 Senior Seminar	1
Chemical Engineering Elective ¹	3

¹ Check with your advisor for a list of acceptable and/or recommended elective courses