B.S. in Mechanical Engineering
Degree Program Handbook
(**Fall 2025)**

The University of New Mexico
School of Engineering
Department of Mechanical Engineering

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(update date: 10/15/2025)

The School of Engineering (SOE) at the University of New Mexico is ranked among the top engineering schools in the country. Our Mechanical Engineering faculty have degrees from some of the best institutions in the world. We are ABET accredited, and we take great pride in the quality and breadth of our programs. This is apparent through the successes of our many outstanding alumni. In fact, we were previously recognized by ABET as one of few programs in the Nation with a healthy and diverse number of design courses in the curriculum, and by NSF (National Science Foundation) as a mechanical engineering program attracting above average percentage of female students compared to many other departments nationwide. We recognize that education is a lifelong process; let us help you with your educational journey.

College is an exciting and challenging part of your life; it takes dedication and marshaling of your energies to achieve your degree. As a student, your goal should be to become a professional, not just to take courses. We look forward to working with you while you are here and after you graduate, helping you gain the knowledge and build the skills necessary to achieve all your life's goals.

1 Introduction

This handbook provides information about the *Bachelor of Science in Mechanical Engineering (BSME)* degree program, offered by the Department of Mechanical Engineering (ME).

Students are expected to study this document carefully, and consult with their ME advisors if there are any questions.

The BSME program is accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology (ABET). The acronym “ABET”, as used in this handbook, is meant to refer to the EAC of ABET in all cases.

Successful completion of the ME program (or other ABET accredited engineering programs) with a B.S. degree is the first step to becoming a licensed professional engineer. Various states require engineering licenses for those individuals who publicly represent themselves as engineers. This requirement is for the purpose of protecting the public interest. Therefore, all ABET accredited programs must meet various minimum standards. The purpose of this document is to provide students with the information which supersedes and supplements the University of New Mexico (UNM) Catalog.

2 Career Opportunities

Mechanical Engineering is a very diversified profession that is concerned with the research and development of new technologies, adoption of technologies, design, analysis, and operation of machines, hardware, software, and systems. It has been, and continues to be, a field that provides challenging, exciting and rewarding career opportunities. Mechanical engineers apply mathematics, physics, chemistry, and other sciences, together with computers, instrumentation, and other tools to create a wide range of hardware, software, and systems.

The continuing need to improve and design products and systems makes the mechanical engineering profession essential and very much in demand. The B.S. degree program in ME provides graduates with the necessary skills to compete in this rapidly changing discipline. In addition, the BSME provides a solid, scientific foundation for other degrees such as the MBA, MD, DDS, etc.

The present demand for MEs is excellent, and the employment rate for UNM graduates continues to be high. The demand is expected to remain strong, with continued economic

expansion.

Mechanical Engineers are employed by large corporations as well as by small companies, in various governmental agencies and laboratories, and as consulting engineers. Many mechanical engineers have started and developed successful companies with products that meet society's needs and desires. The career work is varied; it includes research, development, design, manufacturing, sales, and management. It also provides professional opportunities for interaction among engineering disciplines and sciences. Industries employing mechanical engineers include public utilities, aerospace, computer, heating and air conditioning, automotive, transportation, and construction. Mechanical engineers are also employed by Government laboratories involved in activities as wide as developing alternative energy sources, oceanographic studies, space missions, aircraft testing, weapons development, and atmospheric research. Students are urged to become familiar with the types of assistance provided by the SOE's Internship Programs at Engineering Student Success (ESS) Center and by UNM Career Services (located in Student Services Center) in relation to both Internships/Co-operative Education Program and employment.

3 Admission to Baccalaureate Program

Students must be admitted for study at the University of New Mexico, and must have completed approximately one year of the freshman year subjects, before applications are processed for admission to the Baccalaureate Program in Mechanical Engineering. Approval from the ME Department is required. Applicants must consult the appropriate departmental advisor for evaluation of academic work before admission can be completed.

At least 18 semester hours of freshman year technical subjects are required by the School of Engineering for admission into degree programs. For the mechanical engineering department, these courses must include the following 14 credit hours: MATH 1512 Calculus I (4), MATH 1522 Calculus II (4), PHYS 1310 Calculus-Based Physics I (3), and ME 160L Mechanical Engineering Design I (3). Four other credit hours can be taken from: ENG 130L Introduction to Engineering Computing (3), CHEM 1215 General Chemistry I (3), CHEM 1215L General Chemistry I Laboratory (1), and PHYS 1310L Calculus-Based Physics I Laboratory (1). A minimum grade-point average of 2.75 in those technical courses is required for admission to undergraduate study in Mechanical Engineering.

A cumulative grade-point average of at least 2.23 (in technical plus non-technical courses) is also required for admission into ME. All applicants must have completed English 1110 or its equivalent before admission. As of Fall 2016, all courses required in the BSME program must have grades of C or better for satisfying both admission and graduation requirements. The same applies to required Core Curriculum courses.

Students transferring to the ME department (from any institution, including UNM) need to also meet the GPA and admission course requirements stated above.

Starting in Fall 2017 and for admission into the ME Department, any course required for the BSME cannot have been attempted more than three times. An attempt includes receiving any letter grade (A through F), WP, WF, W, WNC, CR, NC, I or AUDIT. For the purposes of this requirement, course work taken at other institutions is treated the same as course work taken at the University of New Mexico. Also, courses taken five or more years ago do not count towards this three-attempt rule.

4 Advisement

Pre-major engineering students who have indicated ME as their intended major are advised by the ME Undergraduate Advisor. Upon admission to the ME program (until graduation), each

student will be assigned to one of the faculty members for advisement. Students in the ME program are required to seek advisement from their designated advisor each semester during the pre-registration period.

The purpose of this session is to help the student with any problems he/she may have in his/her program of studies. Students will HAVE AN ADVISEMENT HOLD AND not be allowed to register until they have consulted with their advisor.

5 Warning, Probation, Suspension, and Dismissal

The School of Engineering (SOE) has its own rules or policies on Warning, Probation, Suspension and Dismissal. Refer to this weblink:
https://catalog.unm.edu/#/content/650b0d44c158a3001cae3e50

6 Program Goals

The principal goal of the BSME program is to provide students with the fundamentals of mechanical engineering to insure they will have a solid base for an engineering career. This includes building a sufficient knowledge, creative and analytical capability, and communication skills so that the graduates can continue to expand their learning as their fields of interest and the scope of mechanical engineering changes. Our core courses are intended to provide a broad base so that those who terminate their formal education with the BSME degree can continue to grow intellectually. Likewise, the base provides insight into fields that students may choose to study at the graduate level.

This goal is met by a curriculum in which fundamental knowledge of earlier years is applied in later engineering courses. Specifically, the goals for the BSME program at UNM are closely linked to the criteria set forth by ABET. The following statement has been adopted by the Mechanical Engineering Faculty to represent our educational goals.

Program Educational Objectives

Mechanical Engineering graduates will:

- *Meet or exceed the expectations of employers of mechanical engineers*
- *Continue their professional development by pursuing advanced study if qualified and desired*
- *Continue their professional development by pursuing leadership roles in their profession and/or communities*

Student Outcomes

The Department of Mechanical Engineering at the University will provide students with a quality mechanical engineering education. Each Mechanical Engineering student will demonstrate the following by the time of graduation:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

3. An ability to communicate effectively with a range of audiences.

4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

7 The BSME Curriculum

The BSME Curriculum is shown in: http://degrees.unm.edu/units/4658/periods/104/plans. It is the student's responsibility to fulfill all the degree requirements.
Students are responsible for reading and understanding the UNM Catalog. Entering students should especially read the sections which pertain to general academic regulations, School of Engineering (SOE) regulations, the requirements for the BSME program, and the course descriptions, including the prerequisites and co-requisites: https://catalog.unm.edu/#/programs/B1EaXgQco5?bc=true&bcCurrent=Bachelor%20of%20Science%20in%20Mechanical%20Engineering&bcGroup=Mechanical%20Engineering&bcItemType=programs

Figure 1 - Curriculum in Mechanical Engineering - Fall 2025 Catalog Year

Total credit hours required for graduation: 122

Freshman - 1st semester 17 credit hours
CHEM 1215 General Chemistry I (3)
CHEM 1215L General Chemistry I Lab (1)
ENGL 1120 Composition II (3)
ME 160L Mech Engr Design I (3)
MATH 1512 Calculus I (4)
Core Arts& Design Elective (3)

Sophomore - 1st semester 17 credit hrs
ME 260L Mech Engr Design II (3)
CE 202 Engineering Statics (3)
PHYS 1320 General Physics II (3)
PHYS 1320L General Physics II Lab (1)
MATH 2530 Calculus III (4)
ME 217 Energy, Enviro, and Soc (3)

Junior - 1st Semester 16 credit hours
ME 317L Fluid Mech (4)
ME 301 Thermodynamics (3)
CE 302 Mechanics of Materials (3)
Math Elective (3)[1]
ME 357 Intro to Mech Vibrations (3)

Senior - 1st semester 13 credit hours
ME 320L Heat Transfer (4)
ME 459 Mech Engr Design IV (3)
Mech Engr Elective (3)[2]
Mech Engr Elective (3)[2]

Freshman - 2nd semester 17 credit hours
Core Communication Elective (3)
PHYS 1310 General Physics I (3)
PHYS 1310L General Physics I Lab (1)
MATH 1522 Calculus II (4)
ENG 130L Intro to Engineering Computing
Core Humanities Elective (3)

Sophomore - 2nd semester 16 credit hrs
ME 306 Dynamics (3)
ECE 203L Circuit Analysis (3)
MATH 316 Applied Ord Diff Eqns (3)
ME 318L Mech Engr Lab (4)
Core Second Language Elective (3)

Junior - 2nd semester 13 credit hours
ME 360L Mech Engr Design III (3)
ME 380 Mech Control Systems (3)
ME 370L Engr Materials Science (4)
Mech Engr Elective (3)[2]

Senior - 2nd semester 13 credit hours
ME 460 Mech Engr Design V (4)
Technical Elective (3)[3]
Mech Engr Elective (3)[2]
Mech Engr Elective (3)[2]

FSAE Option

FSAE is a program in which the students design, build, and test a racing car. Students wishing to pursue the Formula SAE option, substitute the following curriculum for the second semester of their Junior year and both semesters of their senior year. All three FSAE courses must be completed for this option.

Junior - 2nd semester 14 credit hours
ME 360L Mech Engr Design III (3)
ME 380 Mech Control Systems (3)
ME 370L Engr Materials Science (4)
ME 406L FSAE I (4)

Senior - 1st semester 13 credit hours
ME 320L Heat Transfer (4)
ME 459 Mech Engr Design IV (3)
Mech Engr Elective (3)[2]/ME150 (3)
ME 407 FSAE II (3)

Senior - 2nd semester 12 credit hours
ME 408 FSAE III (3)
Technical Elective (3)[3]
Mech Engr Elective (3)[2]
Mech Engr Elective (3)[2]

[1] "Math Elective" course must be selected from MATH 311, 312, 313, 314, 321, or STAT 345.

[2] "Mechanical Engineering Electives" includes all Mechanical Engineering elective courses 300 level and above.

[3] "Technical Elective" may be selected from the Mechanical Engineering Electives or from approved upper division (300 level and above) courses from Math/Statistics, Chemistry, Physics, Computer Science, and Engineering. Technical Electives may not be taken on the CR/NC grading option.

In addition, the "Technical Elective" can be satisfied by taking" ME 150 - Introduction to Modern Mechanical Engineering" (3)

Moreover, the "Technical Elective" can be satisfied by any combination of the following to yield a total of 3 credit hours:
- ECE 206L – Instrumentation (2)
- PHYS 2310L - Calculus-Based Physics III Laboratory (1)
- PHYS 2310 - Calculus-Based Physics III (3)

Important Note: The pre-requisites for the courses above, along with the 8-semester BSME degree plan, can be found at this website:
https://degrees.unm.edu/units/4658/periods/120/plans

8 Core Curriculum Electives for ME Students

The Core Curriculum (General Education Curriculum) electives are given in the following UNM link: https://gened.unm.edu/. **A grade of C or better (not C-) is required in all courses used to fulfill the requirements of the Core Curriculum.** This includes required courses: ENGL 1110 - Composition I , & ENGL 1120 Composition II, MATH 1512 Calculus I, MATH 1522 Calculus II, CHEM 1215 General Chemistry I, CHEM 1215L General Chemistry I Lab, PHYS 1310 General Physics I, PHYS 1310L General Physics I Lab, ME 217, etc.

9 Mechanical Engineering Courses

See them on the http://degrees.unm.edu website, or specifically at:

http://degrees.unm.edu/units/4658/periods/108/plans

10 Independent Study and Research Project Experience

The following professors have indicated an interest in guiding BSME students through independent study (Problems Courses) or research projects:

Sakineh Chabi
Associate Professor
email: schabi@unm.edu
Phone: 505-277-1343
Office: ME 421
Areas of Interest: engineering multifunctional materials, mechanics of materials, polymers, ceramics, and energy-related materials

Leilei Cui
Assistant Professor
email: lcui@unm.edu
Office: ME 435
Aeras of Interest: Reinforcement learning, optimal control, the interplay between control theory and optimization, locomotion control of legged robots.

Claus Danielson
Assistant Professor
email: cdanielson@unm.edu
Office: ME 436
Areas of Interest: Optimal and constrained control, machine learning for autonomy, planning and optimization

Ahmed Hasan
Lecturer III and Research Professor
email: ahasan@unm.edu
Phone: 505-480-6838
Office: ME 404
Areas of Interest: backend of the nuclear fuel cycle, integrated management of Radioactive Sources, development of special filter media for removal of selective elements and radioactive colloidal particles

Nathan Jackson
Associate Professor
email: njack@unm.edu
Phone: 505-272-7095
Office: ME 319
Areas of Interest: MEMS fabrication, vibration energy harvesting, atomizer technology, acoustic

resonators, smart material development, flexible/stretchable systems, neural interface devices, MEMS sensors and biosensor technology

Tariq Khraishi
Professor and Director of Undergraduate Program
email: khraishi@unm.edu
Phone: 505-277-6803
Office: ME 317
Areas of Interest: Design, solid and fluid mechanics, crystal plasticity, materials science and engineering, biomechanics, 3D printing

Georgios Koutsakis
Assistant Professor
email: koutsakis@unm.edu
Office: ME 405
Areas of Interest: Energy, heat transfer, reactive flows, fracture mechanics, propulsion materials

Pankaj Kumar
Assistant Professor
email: pankaj@unm.edu
Phone: 505-277-5613
Office: ME 423
Areas of Interest: Additive manufacturing, materials for extreme environments, alloys and microstructure design, powder metallurgy, materials characterization, mechanical behavior of materials, fatigue, creep, and fracture

Matthias Pleil
Lecturer III and Research Professor
email: mpleil@unm.edu
Phone: 505-272-7157
Office: ME 403
Areas of Interest: Microsystems fabrication and design, micro-nano technician education, STEM education

Svetlana Poroseva
Professor and Director of the Graduate Program
email: poroseva@unm.edu
Phone: 505-277-1493
Office: ME 422
Areas of Interest: Turbulent flows, aerodynamics, wind energy, system survivability, integrated systems, uncertainty quantification

John Russell
Professor
email: jjrussel@unm.edu
Phone: 505-277-1345
Office: ME 328
Areas of Interest: Vibrations, stability and control of dynamic systems, race car design

Christina Salas
Associate Professor and Director, Biomedical Engineering Graduate Program
Email: csalas@unm.edu
Office: CEC 2043
Areas of Interest: tissue biomechanics, tissue engineering, bio-additive manufacturing, biomaterials, biodesign (modeling, fabrication), finite element analysis, mechanics of materials, fabrication of hybrid AM platforms for multiscale manufacturing

Stephen Secules
Associate Professor
Email: secules@unm.edu
Office: CEC 2092
Areas of Interest: engineering education, acoustics

Yu-Lin Shen
Professor
email: shenyl@unm.edu
Phone: 505-277-6286
Office: ME 202/429
Areas of Interest: Mechanical behavior of materials, microelectronic devices and packages, thin films and heterogeneous material systems

Francesco Sorrentino
Professor
email: fsorrent@unm.edu
Phone: 505-277-2349
Office: ME 330
Areas of Interest: Dynamics and control of complex networks, identification of nonlinear systems, adaptive sensor networks, adaptation in complex systems, and complex distributed energy systems. Other subjects of interest are the dynamics of large networks of coupled neurons and evolutionary game theory.

Peter Vorobieff
Professor and Interim Department Chair
email: kalmoth@unm.edu
Phone: 505-277-8347
Office: ME 424
Areas of Interest: Fundamental hydrodynamic instabilities, meandering flows, multiphase flows, shock-accelerated flows, two-dimensional hydrodynamics, renewable energy, advanced flow field measurement techniques

Wenbin Wan
Assistant Professor
email: wwan@unm.edu
Phone: 505-277-1734
Office: ME 425
Areas of Interest: Cyber-physical systems, autonomous vehicles, resilient estimation, safe control methods, machine learning

Chi Wang
Assistant Professor
email: chiw@unm.edu
Phone: 505-277-1162
Office: ME 420
Areas of Interest: Phase change heat transfer, advanced microscale diagnostics, thermal management, nanoengineering

Heng E. Zuo
Assistant Professor
email: zuoh@unm.edu
Phone: 505-277-0646
Office: ME 401
Areas of Interest: Space optics development & applications (high energy (UV/X-ray), astronomy mirrors, adaptive optics, free space optical communication), advanced laser micromachining & ultrafast laser material processing, numerical modeling of thin optics

Through any of the above research activities, students may obtain technical elective credits (ME451 or ME452: Problems Course; up to 6 credit hours of Problems Courses) with any of the above supervising faculty members. To obtain approval, the student is required to prepare a written proposal that includes the following information:

1. Identification: title, author, course number, credit hours, semester, and supervising professor.
2. Introduction: a brief description of the problem, its engineering significance, and how it fits into the student's educational goals.
3. Procedure: a description of the work as well as the approach to the problem; it should include the equipment, resources, technician time, and other needs for carrying out the work.
4. Results: a discussion of the expected results or goals of the activity.
5. Bibliographical references.

The proposal need not be lengthy: one or two pages will suffice.

Upon approval of the proposal by the supervising professor and the Director of Undergraduate Program, it will be filed in the student's academic folder. This should be done no later than the first week of the semester.

11 Transfer Courses

Courses taken at nationally or internationally accredited colleges or universities may be transferred. These courses must be equivalent to the required courses in the BSME program at UNM.

Courses from engineering programs that are not accredited by ABET are not applicable towards the BSME degree at UNM.

A basic policy of ABET, which accredits the BSME program, is that technology courses should not be accepted in lieu of engineering courses.

12 Minimum Grades ("No C- or below" Rule)

For students admitted to the ME Department in Fall 2016 and beyond, the minimum acceptable grade for all courses applicable towards the BSME degree is a C.

13 Credit / No Credit Option

All courses applied towards the BSME degree must be taken for grade only; i.e., CR/NC option is not allowed for these courses (except *maybe* in cases of AP and CLEP credits, or Second Language course).

14 Scholarships

The SOE and the ME Department award a number of scholarships to its students. Normally, a student applies for the scholarships in the spring or summer semester of the academic year. These scholarships are awarded for the following semester or year. Some scholarships are specifically designated for Mechanical Engineering. Students are encouraged to apply. For a list of scholarships available to ME students, the student should consult Engineering Student Success (ESS) Center: https://ess.unm.edu/.

15 Student Activities

Student organizations of the ME Department allow students to develop lasting friendships.

The ME Department has a student section of the American Society of Mechanical Engineers (ASME). The section organizes tours of local industry and laboratories. It also invites speakers of interest to the students and faculty. ASME members frequently participate in design and/or paper presentation competitions.

The American Institute of Aeronautics and Astronautics (AIAA) student members also have the opportunity to prepare and present papers at an annual student conference.

Many of these groups' activities are held jointly with the local professional sections; this provides an excellent opportunity for students to interact with practicing engineers.

Pi Tau Sigma is the mechanical engineering honorary society that is open to qualified ME students. Eligible students are automatically contacted and invited to join.

16 Departmental Honors

Students who wish to graduate with Departmental Honors are required to meet the following criteria:

1. A minimum degree GPA corresponding to the following designations:

   3.5-3.74 *cum laude*
   3.75-3.89 *magna cum laude*

3.9 (and higher) *summa cum laude*

2. ME 451/452 – Undergraduate Problems

   Complete one or more ME 451/452 Individual study (Undergraduate Problems) course(s) with a professor in the Mechanical Engineering Department. The intent of this individual study course is to research a topic for an honors thesis. (3 hours minimum)

3. ME 463 – Undergraduate Honors Thesis

   The students will enroll in ME 463 and complete an honors thesis. An honors thesis is a scholarly work based upon the research performed in the individual study course(s). (3 hours)

Please refer to sections of this document concerning independent studies and technical electives for further information.
For more information on Departmental Honors, visit:
https://me.unm.edu/students/undergraduate/index.html
And click on the links for Departmental Honors including the required form.

17 Planning for Graduate Study

The ME Department offers programs of study towards the Master of Science and Doctor of Philosophy degrees. Consult the UNM Catalog and contact the departmental Graduate Advisor for detailed information.

Senior students with a GPA of 3.0 or greater who are within 10 semester hours of completing the BSME degree may obtain graduate credit (in graduate courses) for a maximum of nine (9) semester hours, provided that they meet the requirements specified in the Graduate sections of the UNM Catalog.

For detailed information about the ME Graduate Program, visit:
https://me.unm.edu/students/graduate/index.html

18 Shared Credit Program - B.S./M.S. in Mechanical Engineering

The School of Engineering offers a Shared Credit Degrees Program designed to allow students to complete B.S. and M.S. degrees in five years (depending on the student's mathematics preparation upon entering UNM as a first-year undergraduate student). To accomplish this, some courses are counted towards both the Bachelor's and Master's degrees.

Department of Mechanical Engineering allows up to 12 credit hours of undergraduate electives to be replaced by 500-level graduate courses that count towards both degrees.

Eligibility: Students may apply to the shared credit program during the undergraduate junior year, after completing 75 credit hours applicable to the BSME degree. At least 64

credit hours need to be mathematics, science and engineering courses (ME, CE, ECE, CS, Chem, Math, Stat and Phyc) applicable to the BSME degree. A cumulative GPA of at least 3.00 is normally required, counting only the completed courses applicable to BSME at the time of application.

The application deadlines are for Fall July 31st, for Spring November 30th and for summer April 30th. The departmental decision will be made by the beginning of the following semester. Admission to the graduate portion of this program is provisional and is not finalized until the student satisfactorily completes the requirements for the B.S. degree.

To get full information about the Shared Credit Program, including any forms, visit:
https://me.unm.edu/students/undergraduate/index.html
And click on the links for Shared Credit including the required form(s).

19 Application for Degree

During the second semester of a student's junior year or prior to enrollment of the 100th credit hour for the degree, a student is required to file the form “Application for an Undergraduate Degree.” This form may be obtained from the ME website:
https://me.unm.edu/students/undergraduate/index.html
And click on the link for “Application for Degree”. Failure to complete this form as indicated may delay graduation.

20 Concentration in Microsystems Engineering

The ME Department has one studies concentration. It is in Microsystems Engineering. The required courses for it are below. If you like to participate in it, you can ask your undergraduate staff advisor for assistance to add this concentration officially on your LoboTrax Degree Audit.

		Credit Hours
ME 318L	Mechanical Engineering Laboratory	4
ME 370L	Engineering Materials Science	4
ME 417	Fundamentals of Microsystems Fabrication	3
ME 418	Foundations of Microsystems Design	3
ME 419	Advanced Micro- and Nanosystems Engineering	4
	Total	**18**

21 ME Department Website

More information on the BSME, the UNM Mechanical Engineering degrees including graduate degrees, opportunities, the Shared Credit program, ME faculty and staff, requirements, etc. can all be found on the departmental website: https://me.unm.edu/