BS Integrative Engineering
Integrative Engineering

Under Review | Fall 2026

Proposal Information

Workflow Status
In Progress

Faculty Senate Approval, Faculty Senate
Waiting for Approval | Faculty Senate Approval

expand ▲

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Proposal Information

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College
School of Engineering

Department
Interdisciplinary: Engineering

Campus
Main Campus

Effective Term and Year

Proposed Effective Term and Year
Fall 2026

Justification

Program Justification
Integrative Engineering is a multidisciplinary, project-based degree program designed to address the growing demand for engineers with expertise across multiple fields. More than a traditional engineering major, it equips students with a broad skill set to work effectively in dynamic and diverse career paths. The program aims to provide graduates with a comprehensive understanding of engineering principles, strong problem-solving and creative design abilities, interpersonal and communication skills, a commitment to lifelong learning, and dual specialization in both technical and professional areas of knowledge. Example specializations are provided in an attached document and will be listed on department website. Specializations will be chosen by students in collaboration with their advisor.

University of New Mexico offers our own Bachelor of Arts in Liberal Arts and Integrative Studies (https://lais.unm.edu/about-us/index.html), which allows students to create personalized degree paths by combining various academic subjects with concentrations including global and national security, pre-law, health professionals, and military studies. However, this pathway does not include engineering, due to the fact that engineering degrees must be ABET accredited for graduates to obtain engineering licensure in most states and for general acceptance across the profession.

Our new integrated engineering program was conceptualized in response to both national curriculum reviews and local industry partners. According to the New Mexico Department of Workforce Solutions projections for the state's economic growth, the combined occupation group of Architecture and Engineering is projected to grow by 12% in the coming years [1]. Further, the industries with the largest projected growth are (1) Art Entertainment Recreation (36.6%), (2) Accommodation and Food Services (18.3%), (3) Health Care and Social Assistance (16.2%), (4) Professional Scientific and Technical Services (16.2%), (5) Manufacturing (10.7%), and Construction (10.7%). These industries can be better supported with a flexible degree plan that allows students to pursue specializations and customized degree pathways in these and other areas. Specific Feedback from our SOE Industrial Round Table and Industrial Social events have also shown that employers today are increasingly seeking a new generation of engineers with solid foundational knowledge, strong interpersonal skills, and the tenacity and adaptability for continuous learning. These engineers must be able to collaborate across disciplines, develop specialized expertise through on-the-job training, and quickly transition from technical roles to leadership positions.

By launching an integrated engineering program, UNM will further its mission of providing top- quality engineering education to New Mexicans. Our graduates will be well-prepared and highly competitive for employment in a wide range of industries, including but not limited to energy, construction, pharmaceuticals, food production, technology policy, patent law, the automotive sector, and water resources.

Key Features of the BS in Integrative Engineering

- Efficient: 120 minimum credit hours, with space for elective credits. Designed for completion in four academic
- Flexible: Designed for different levels of math progression:
- Business / policy / statistics-focused math (with fewer Calculus-dependencies)
- Engineering-focused math (with Calculus-based Physics as required for entry)
- Pursuing ABET Accreditation: Meets curricular requirements for ABET accreditation under the General Engineering classification
- Design spine: 15 credits. Features a problem-solving focused design experience in each year of the curriculum including a two-semester capstone experience in the 4th year
- Dual specialization: Students select a dual Technical/Engineering Science area and Professional area of specialization, providing unique interdisciplinary preparation among all undergraduate students. 12 credits of Technical specializations require advanced (3000-4000 level) study in SoE, 12 credits of Professional specialization require management, business, communicationor non-engineering courses.
- Example technical specializations: building infrastructure, microelectronics, environment
- Example professional specializations: communication, public policy, management
- Core engineering content: Minimum 18 hours core engineering curriculum that provides students with breadth in a range of engineering topics (as required for ABET accreditation and preparation for a range of engineering work and study) and depth (as preparation for Technical specialization and career path).
- Professional skills: 9 credits in core professional skills such as communication, leadership, management. These credits are provided by a combination of the SOE faculty and the wider university non-engineering disciplines.
- Prerequisites: Minimum 30 hours of math and sciences as required for ABET accreditation and prerequisites for the engineering curriculum.

[1] 2023-2033 New Mexico Employment Projections. (website accessed October 10, 2025). New Mexico Department of Workforce Solutions. https://www.dws.state.nm.us/en-us/Researchers/Data/Employment-Projections

Program Category and Level

Program Category
Degree

Program Level
Undergraduate

Degree, Minor, or Certificate Name
Integrative Engineering

Certificate or Degree Type
Bachelor of Science

Degree/Certificate Level
Undergraduate

Proposed CIP Code
14.9999

Proposed CIP Title
Engineering, other

Is this program also offered online?
No

New program courses

Composition of new program

Existing courses	Revised courses	New Courses	Total Credits
108	3	6	117

New Degrees/Certificates Only

Pre-proposal Executive Summary
- BS Integrative Executive Summary.docx

Program Duplication
The proposed new program doesn't duplicate any existing program.

Correspondence

Pre-proposal Approved?
Approved

Associate Provost Memo
- Provost Approval Letter.pdf

Proposal File Upload
- Degree Track Examples.pdf
- BS Integrative SS v5.docx

HED Submission Documents
- HED Undergrad Degree Form SS.docx

File Uploads

Document uploads
- IE Letters of Support Degree Proposal Combined 2025.pdf
- DeanSupportLetter_IntegrativeEngineering_24Oct2025_signed.pdf

Associated Kuali Forms

Select any associated course forms that exist
ENG 325 - Community-Engaged Engineering Project Experience (3)
ENG 425 - Integrative Engineering Capstone I: Ideation (3)
ENG 426 - Integrative Engineering Capstone II: Implementation (3)
ENG 116 - Introduction to Engineering (3) | **Inactive**

Select any associated program forms that exist

Shared Credit and Dual Degree information

Interdepartmental Program
No

Catalog Information

Program Description

This program is designed to meet the demands of a rapidly evolving industrial landscape, which requires engineers capable of thriving in diverse and interdisciplinary environments. It also offers a flexible pathway for students whose interests extend beyond the traditional engineering disciplines currently available within the School of Engineering.

This degree will be most useful and interesting to students who:

- Seek to create their own degree program that prepares them for a career or advanced studies in an interdisciplinary domain, such as:
  - Climate mitigation/decarbonization engineering
  - Technical art & entertainment design (for installations that require robotics, projection, human-computer interaction, or structural integrity to an engineering standard)
  - Systems integration (e.g., for built infrastructure, air transportation)
  - Ethics and social impacts of artificial intelligence
- Are planning to pursue a career that requires a strong yet broad technical foundation, such as:
  - Medical device development or public health research
  - Patent and IP law
  - Technology policy
  - Engineering entrepreneurship
  - Human factors engineering and human-computer interaction (including AI/Autonomous Systems with humans-in-the-loop)
  - Starting an engineering small business or running a family business (where each individual needs to perform a variety of tasks)
- Want to study an engineering major that is currently unavailable at UNM such as:
  - Aerospace engineering
  - Acoustical engineering
  - Industrial / Systems engineering
  - Humanitarian engineering
  - Engineering education
  - Engineering management

While many of these fields would require additional graduate-level specialization or apprenticeship for full career preparation beyond any Bachelor's degree, the B.S. in Integrative Engineering will prepare students for both technical study and the wider societal aspects of these careers.

Admissions Requirements

The general criteria for admission into School of Engineering will be applied to students wishing to study Integrative Engineering.

Graduation Requirements

Professional Credential/Licensure Program Information

License/Certification associated with program

No

Professional Accrediting Bodies

Accreditation is being pursued with ABET, the Accreditation Board of Engineering and Technology, Inc.
https://www.abet.org/

ABET accreditation is completed on a 3-year cycle across the entire university. ABET requires the program to have graduated a student before accreditation can be pursued.

There is a licensure option called Professional Engineer which we will prepare students to take a qualifying exam for, but full licensure takes more steps and years of apprenticeship post-graduate https://www.sblpes.state.nm.us/licensing/ .

Degree Information

Degree Hours

120

Minimum Major Hours

Degree Requirements

Requirements

- Complete all of the following
  - **Math and Science**
    - Complete all of the following
      - Earned a minimum grade of C in each of the following:
        - MATH1512 - Calculus I (4)
        - MATH1522 - Calculus II (4)
      - Earn at least 6 credits from the following:
        - STAT345 - Elements of Mathematical Statistics and Probability Theory (3)
        - MATH2531 - Calculus III (4)
        - MATH316 - Applied Ordinary Differential Equations (3)
        - MATH314 - Linear Algebra with Applications (3)
        - STAT345 - Elements of Mathematical Statistics and Probability Theory (3)
        - ECE300 - Advanced Engineering Mathematics (4)
      - Earned a minimum grade of C in each of the following:
        - PHYS1310 - Calculus-Based Physics I (3)
        - PHYS1310L - Calculus-Based Physics I Laboratory (1)
        - PHYS1320L - Calculus-Based Physics II Laboratory (1)
        - PHYS1320 - Calculus-Based Physics II (3)
        - CHEM1215 - General Chemistry I for STEM Majors (3)
        - CHEM1215L - General Chemistry I for STEM Majors Laboratory (1)
      - Earned at least 4 credits from PHYS, BIOL, CHEM, MATH, STAT, GEOL, ASTR, or BIOC
      - Students are required to take minimum 30 credits in college-level math and science for ABET accreditation.
  - **Design Spine**
    - Complete all of the following
      - Earned a minimum grade of C in each of the following:
        - ENG116 - Introduction to Engineering (3)
      - Earned a minimum grade of C in each of the following:
        - ENG325 - Community-Engaged Engineering Project Experience (3)
        - ENG425 - Integrative Engineering Capstone I: Ideation (3)
        - ENG426 - Integrative Engineering Capstone II: Implementation (3)
        - ENG200 - Technology in Society (3)
  - **Professional Skill Development**
    - Complete all of the following
      - Earned a minimum grade of C in each of the following:
        - ENGL1120 - Composition II (3)
        - ENGL2210 - Professional and Technical Communication (3)
      - Earned a minimum grade of C in at least 1 of the following:
        - MGMT158 - Ethics in Organizations (3)
        - ME217 - Energy, Environment and Society (3)
        - GEOG2170 - Energy, Environment and Society (3)
      - Earned a minimum grade of C in at least 1 of the following:
        - CE455 - Engineering Project Management (3)
  - **Engineering Core Preparation**
    - Complete all of the following
      - **Engineering Science**
        - Complete all of the following
          - Earn at least 12 credits from the following:
            - CBE251 - Chemical Process Calculations (3)
            - CBE302 - Chemical Engineering Thermodynamics (3)
            - CE202 - Engineering Statics (3)
            - ECE338 - Intermediate Logic Design (3)
            - CE331 - Fluid Mechanics (4)
            - ME301 - Thermodynamics (3)
            - ME306 - Dynamics (3)
            - ECE203 - Circuit Analysis I (3)
            - ECE213 - Circuit Analysis II (3)
            - CBE311 - Introduction to Transport Phenomena (3)
            - ECE231L - Intermediate Programming and Engineering Problem Solving (4)
            - CE308 - Structural Analysis (3)
            - ECE371 - Materials and Devices (3)
            - ECE381 - Introduction to Electric Power Systems (3)
          - Courses that are the same content across two departments cannot both be counted, for example: ME 301 Thermodynamics and CBE 302 Chemical Engineering Thermodynamics cannot both be counted for the degree.
      - **Engineering Lab**
        - Earn at least 6 credits from the following:
          - ME360L - Mechanical Engineering Design III (3)
          - ME260L - Mechanical Engineering Design II (3)
          - CBE319L - Chemical Engineering Laboratory II (1)
          - ECE322L - Electronics II (4)
          - ECE321L - Electronics I (4)
          - ECE314L - Signals and Systems (4)

- ME318L - Mechanical Engineering Laboratory (4)
- ECE321L - Electronics I (4)
- ECE206L - Instrumentation (2)
- ECE322L - Electronics II (4)
- CBE493L - Chemical Engineering Design (3)

Computer Programming

- Earn at least 3 credits from the following:
  - ENG130L - Introduction to Engineering Computing (3)
  - CSCI1108 - Computer Science for All: Introduction to Computer Modeling (4)

Technical Emphasis

- Earn at least 12 credits from the following types of courses:
  Select courses from one of the technical emphases.

Professional Emphasis

- Earn at least 12 credits from the following types of courses:
  Select courses from one of the professional emphases.

Gen Ed

- Earn at least 9 credits from the following types of courses:
  31 credit hours of Gen Ed are required by the university, however the following categories are covered by or options for students within BS Integrative Engineering requirements. The GenEd categories I Communication, II Mathematics and Statistics, III Science, IV Social and Behavioral Science, and VII Flexible Student Choice can be covered via existing degree requirements. The GenEd categories V-A Humanities, V-B Humanities and Second Language, and VI Creative and Fine Arts: Arts and Design should be elected outside of the degree requirements. Thus these 9 credits are additional credit hour expectations. Please review the General Education Program in this Catalog for additional informaiton on General Education requirements.

Prerequisites / Technical Electives

- Earned at least 9 credits from ME, CNST, CE, ECE, CBE, CHEM, CS, MATH, BIOL, BIOC, BIOM, GEOG, GEOL, NUCE, or NE

Grand Total Credits: 117

Concentrations

Program Concentrations

Code	Title

Concentration Required

No

Emphases

Emphasis required

Yes

Emphasis Hours

24

Emphasis Rules

Pre-Defined Emphases

- Complete all of the following

Professional Emphasis

- Complete 1 of the following
  - Entrepreneurship Professional Emphasis
  - Complete at least 4 of the following:
    - ECON2120 - Microeconomic Principles (3)
    - BUSA3240 - New Venture Strategies (3)
    - BUSA4950 - Managing and Operating Small, Growing Businesses (3)
    - BUSA4210 - International Entrepreneurship (3)
  - Social Justice Professional Emphasis
  - Complete at least 4 of the following:
    - AMST1110 - Introduction to Environmental and Social Justice (3)
    - SOCI452 - Community Organizing and the Struggle for Justice in America (3)
    - SOCI1110 - Introduction to Sociology (3)
    - NATV436 - Environmental Ethics and Justice in Native America (3)
  - Public Policy Professional Emphasis
  - Complete at least 4 of the following:
    - PADM2110 - Public Leadership for Social Change (3)
    - PADM310 - Nonprofit Leadership and Practice (3)
    - POLS2150 - Public Policy and Administration (3)
    - CRP345 - Stakeholders and Environmental Policy (3)

Technical Emphasis

- Complete 1 of the following
  - Microelectronic Systems Technical Emphasis
  - Complete at least 4 of the following:
    - ECE471 - Materials and Devices II (3)

        - ECE570 - Optoelectronic Semiconductor Materials and Devices (3)
        - ME418 - Foundations of Microsystems Design (3)
        - ME417 - Fundamentals of Microsystems Fabrication (3)
    - Environment Technical Emphasis
    - Complete at least 4 of the following:
        - CE335 - Environmental and Water Resources Engineering (3)
        - CE442 - Hydraulic Engineering and Hydrology (3)
        - CE438 - Sustainable Engineering (3)
        - CE440 - Design of Hydraulic Systems (3)
    - Building Infrastructure Technical Emphasis
    - Complete at least 4 of the following:
        - CE302 - Mechanics of Materials (3)
        - CE372 - Principles of Construction (3)
        - CE371 - Structures for Construction (3)
        - CE305 - Infrastructure Materials Science (4)

Self-Defined Emphasis for Honors College IE Students

- Students enrolled in the Certificate in Honors Interdisciplinary Liberal Arts will be eligible to propose their own emphases in Integrative Engineering. These courses will include 4 courses / 12 credits in a Professional (outside of School of Engineering) area and 4 courses / 12 credits in a Technical (inside School of Engineering) area. These emphases will be reviewed by the faculty and advisors of Integrative Engineering for coherence and professional / technical relevance.

Sample Degree Plan

Sample Degree Plan Upload

- Degree Track Examples.pdf

Program Learning Outcomes

Learning Outcomes

Program Educational Objectives

The B.S. in Integrative Engineering program will:

- Provide students with useful knowledge in both engineering social science / humanities towards desired career trajectories
- Help students learn to learn and pick up new technical skills, to not be afraid of lacking knowledge in a technical area but trusting their ability to learn
- Emphasize and develop students' skills in writing, communicating, understanding people, and thinking critically about messages and society
- Develop students' ability to look at engineering problems from a holistic perspective that integrates social / human / ethical factors with technical design factors
- Support students in developing their interdisciplinary interests and career paths

Student Learning Outcomes

Upon graduation, students in the BS in Integrative Engineering will demonstrate:

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
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
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

Registrar Office Only

CM Program Code
BS Integrative Engineering

BANP

Banner Program Code

Major Code

Online Program Code

Online Major Code

Pre-major Program Code

Pre-major Major Code

CIP Code
14.9999

Concentration Inheritance
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Catalog
Main Campus

Catalog Activation Date

Registrar Notes Only

MS 11/24/25 removed inactive course, replaced one course with CCN equivalent, removed language from Program Description and Graduation Requirements, as those fields are for information that will be published in the catalog and should not include justifications or degree requirements.