



**Bachelor of Engineering (BEng)
ELECTROMECHANICAL ENGINEERING TECHNOLOGY**

The Bachelor of Engineering in Electromechanical Engineering Technology (BEng. EMET) program is offered in response to a growing demand from industrial and consulting companies for engineering staff members with a wide range of technical knowledge. At Northern, this program will provide a clear pathway towards a bachelor degree for students completing Career and Technical Education associates in Drafting, Electricity and Renewable Energy and Pre-engineering. The primary aim of the BEng. EMET program is to provide graduates with the knowledge and skills necessary to apply current methods and technology to the development, design, operation, and management of electro-mechanical systems, particularly in those industries where automated systems are prevalent. The program will offer a concentration in Solar Energy and will provide the knowledge and skills for this two growing technical fields.

Students are advised not to attempt upper division coursework (300 and 400-level classes) unless you have earned a GPA of 2.5 or better in all coursework taken at the 100 and 200-level. Failure to maintain an overall GPA of 2.0 or better in all coursework will be sufficient cause for being dropped from the program.

GENERAL EDUCATION (39 crs)

COMPLETED

**Planned Timeline
(By Semester)**

Area I Communications (9 crs)

ENG 111 English Composition I (3)

Pre-requisite: ENG 109 or adequate score on the Course Placement Evaluation

ENG 116 Technical Writing (3)

Pre-requisite: ENG 111

SPCH 130 Public Speaking (3)

Pre-requisite: ENG 109 or adequate score on the Course Placement Evaluation

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Area II Mathematics (4 crs)

MATH 162E Calculus I For Engineers (4)

Pre-requisites: MATH 155 or adequate score on the Course Placement Evaluation

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Area III Laboratory Sciences (8 crs)

PHYS 215/L Engineering Physics I with lab (4)

Pre-requisite: ENGR 120L OR MATH 155; Co-requisite: PHYS 215L

Select one class from the following list:

PHYS 216/L Engineering Physics II with lab (4)

Pre-requisite: PHYS 215/L

OR

CHEM 121/L General Chemistry I with Lab (4)

Pre-requisite: MATH 130, high school chemistry, or an ACT score of 19 or higher in Natural Science, and ENG111

OR

Other Science Class with the approval of the advisor (4)

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Area IV Social/Behavioral Sciences (6 or 9 crs)

[#] Students need to take a total of 15 credits from Area IV and V and no less than 6 credits from each area is permitted.

Pre-requisite: ENG 109 or adequate score on the Course Placement Evaluation

Select one class from the following list:

ECON 201 Microeconomics (3)

Pre-requisite: ENG 109 or adequate score on the Course Placement Evaluation

OR

ECON 200 Macroeconomics (3)

Pre-requisite: ENG 109 or adequate score on the Course Placement Evaluation

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Electives (3-6 crs)

You must select courses from different discipline areas

Elective (3) _____

Elective (3) _____

ANTH 101/L Physical Anthropology w/Lab (4)

ANTH 102 Intro to Social & Cultural Anthropology (3) (Fall)

ANTH 111 Language and Culture (3)

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- ANTH 207 Cultures of New Mexico (3)
 - ANTH 110 Indian Culture of the Southwest
 - ECON 200 Macroeconomics (3)
 - ECON 201 Microeconomics (3)
 - GEOG 111 World Geography (3)
 - PSCI 110 The Political World (3)
 - PSCI 120 Contemporary Political Issues (3)
 - PSCI 200 American Politics (3)
 - PSCI 210 State and Local Government (3)
 - PSCI 212 The American Presidency (3)
 - PSY 105 General Psychology (3)
 - PSY 210 Theories of Personality (3)
 - PSY 229 Adolescent Psychology (3)
 - PSY 230 Psychology of Adjustment (3)
 - PSY 232 Abnormal Behavior (3)
 - PSY 270 Social Psychology (3)
 - PSY 290 Developmental Psychology (3)
 - SOC 101 Introduction to Sociology (3)
 - SOC 213 Deviant Behavior (3)
 - SOC 216 Ethnic and Intercultural Relations (3)
 - SOC 220 Social Problems (3)
 - SOC 225 Marriage and the Family (3)
- * Plus, topic courses with student advisor's approval

Area V Humanities and Fine Arts (6 or 9 crs)

Pre-requisite: ENG 109 or adequate score on the Course Placement Evaluation

Second Language Elective (3) _____

Electives (3-6 crs)

You must select courses from different discipline areas

Elective (3) _____

Elective (3) _____

Choose electives from the following list:

- ART 105 Introduction to Art (3)
- ART 107 History of Art I (3)
- ART 208 History of NM Art & Architecture (3)
- ART 211 History of Art II (3)
- DANC240 Dance Appreciation (3)
- ENG 270 Children's Literature (3)
- Pre-requisite ENG 111*
- ENG 262 Literature of the Southwest (3)
- Pre-requisite ENG 112*
- ENG 265 Native American Literature 1 (3)
- Pre-requisite ENG 111*
- ENG 266 Native American Literature II (3)
- Pre-requisite: ENG 111*
- ENG 280 Readings in Literature (3)
- Pre-requisite ENG 111*
- ENG 290 Study of Literature
- Pre-requisite ENG 111*
- ENG 294 Mythology (3)
- Pre-requisite ENG 111*
- HIST 101 Western Civilization I (3)
- HIST 102 Western Civilization II (3)
- HIST 161 History of the U.S. to 1877 (3)
- HIST 162 History of the U.S. from 1877 (3)
- HIST 200 History of the World Religions (3)
- HIST 220 Southwestern Women's History (3)
- HIST 230 Chicano Experience in the US (3)
- HIST 250 American Indian History (3)
- HIST 260 History of New Mexico (3)
- HUM 105 Humanities of the Southwest (3)
- HUM 311 Why the Social Sciences Matter ** (3)
- HUM 414 Humanity and Creativity ** (3)

- HUM 421 History, Literature, Art & Philosophy ** (3)
 - MUS 103 Music History & Literature I (3)
 - MUS 105 Music Appreciation (3)
 - MUS 218 Music History & Literature II (3)
 - PHIL 110 Intro to Philosophical Problems (3)
 - PHIL 111 History of Philosophy (3)
 - PHIL 150 Critical Thinking (3)
 - PHIL 220 Ethics (3)
 - PIS 200 Introduction to Pueblo Indian Studies (3)
 - THE 120 Introduction to Theatre I (3)
 - THE 130 History of Theatre (3)
- Plus, topic courses with advisor's approval

** If your major is in the area of the Humanities/Fine Arts, unless otherwise regulated by a given department, you should select 9 hrs from Area V and 6 hrs. from Area IV; if in the Social/Behavioral Sciences, you should select 9 hrs from Area IV and 6 hrs from Area V. Consult your major advisor. In any case, you must complete a minimum spread of 15 hrs between Areas IV and V.

*** Students in associate degree programs are advised that upper-division courses are not covered under financial aid.

Area VI First Year Experience (3 crs)

FYE 100 First Year Experience (3)
Pre-requisite: None

SUPPORT COURSES (8 crs)

ENGR 120 Introductory Mathematics for Engineering Applications (4)
Pre-requisite: MATH 130 or adequate score on the Course Placement Evaluation

MATH 163E Calculus II For Engineers (4)
Pre-requisites: MATH 162E

PROGRAM REQUIREMENTS (76 crs)

Electromechanical Engineering Technology Courses (64 crs)

- ENGR 110L Introduction to Engineering (2)
Pre-requisite: None
 - DRFT 100 Computer Aided Drafting I (4)
Pre-requisite: None
 - EECE 152 Computer Programming I (3)
Pre-requisite: None
 - MET 201 Applied Mechanics I (3)
Pre-requisite: ENGR 120L or adequate score on the Course Placement Evaluation
 - MET 301 Applied Mechanics II (2)
Pre-requisite: MET 201
 - MET 302 Strength and Properties of Materials (3)
Pre-requisite: MET 201
 - MET 310 Manufacturing Processes and Automation (3)
Pre-requisite: DRFT 100
 - EET 200/L Electrical Systems I with Lab (4)
Pre-requisite: ENGR 120L
 - EET 300/L Electrical Systems II with Lab (4)
Pre-requisite: EET 200/L
 - EET 400/L Control Systems and Instrumentation with Lab (4)
Pre-requisite: EET 300/L
 - EMET 400 Advanced Electro-Mechanical Design (3)
Pre-requisite: DRFT 100, EET 200/L, and MET 302
 - MET 420 Thermal-Fluid Engineering (4)
Pre-requisite: MET 301
 - ENGR 480 Engineering Management and Project Management (4)
Pre-requisite: Junior status or permission of academic advisor
 - EMET 490 Capstone I (3)
Pre-requisite: Senior status
 - EMET 491 Capstone II (3)
Pre-requisite: Senior status
- Lower/Upper Division Engineering or Technical Elective (15)

Solar Energy Concentration (12 crs)

MET 421 Heat Transfer (3)

Pre-requisite: MET 420

ME 403 Solar Thermal Applications (3)

Pre-requisite: MET 421

EECE 453 Electric Energy Storage Devices (3)

Pre-requisite: EET 200/L

EECE 472 Photovoltaic Devices (3)

Pre-requisite: EET 200/L

TOTAL CREDIT HOURS 123

FIRST SEMESTER (16 crs)

ENGR 120L Introductory Mathematics for Engineering Applications (4)

ENGR 110L Introduction to Engineering (2)

DRFT 100 Computer Aided Drafting I (4)

Elective Lower Division Engineering or Tech (3)

FYE 100 First year Experience (3)

SECOND SEMESTER (15 crs)

ENG 111 English Composition I (3)

EECE 152L Computer Programming I (3)

Elective Lower Division Engineering or Tech (3)

Elective Lower Division Engineering or Tech (3)

Elective Lower/Upper Division Engineering or Tech (3)

THIRD SEMESTER (15 crs)

MATH 162E Calculus I for Engineers (4)

PHYS 215/L Engineering Physics I with Lab (4)

EET 200/L Electrical Systems I with Lab (4)

Elective Lower/Upper Division Engineering or Tech (3)

FOURTH SEMESTER (17 crs)

MATH 163E Calculus II for Engineers (4)

MET 201 Applied Mechanics I (3)

ENG 116 Technical Writing (3)

EET 300/L Electrical Systems II with Lab (4)

SBS Elective (3)

FIFTH SEMESTER (16 crs)

EET 400/L Control Systems and Instrumentation with Lab (4)

MET 302 Strength and Properties of Materials (3)

MET 301 Applied Mechanics II (2)

SPCH 130 Public Speaking (3)

PHYS 216/L or CHEM 121/L or Other Science Engineering Physics II with Lab (4) or General Chemistry I/L (4) or Other Science Class with the approval of the advisor (4)

SIXTH SEMESTER (17 crs)

MET 420 Thermal-Fluid Engineering (4)

HFA Elective (3)

EMET 400 Advanced Electro-Mechanical Design (3)

MET 310 Manufacturing Processes and Automation (3)

ENGR 480 Engineering Management and Project Management (4)

SEVENTH SEMESTER (15 crs)

Second Language (3)

EMET 490 Capstone I (3)

EECE 472 PV Devices (3)

MET 421 Heat Transfer (3)

ECON 201 or ECON 200 Microeconomics (3) or Macroeconomics (3)

EIGHTH SEMESTER (12 crs)

ME 403 Solar Thermal Applications (3)
EECE 453 Electric Energy Storage Devices (3)
EMET 491 Capstone II (3)
SBS Elective (3)

Educational Planning Form (Semester)

Fall Semester	Spring Semester	Summer
Total Units	Total Units	Total Units
Fall Semester	Spring Semester	Summer
Total Units	Total Units	Total Units
Fall Semester	Spring Semester	Summer
Total Units	Total Units	Total Units