



## DEGREE SHEET / 2017-2018 CATALOG

Student Name:

Eagle ID:

Eagle Email:

Phone:

### 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 REQUIREMENTS (39 Credits)	SEMESTER	GRADE
<b>AREA I: COMMUNICATIONS (9 Credits)</b>		
ENG 111 English Composition I (3) <i>Pre-requisite: ENG 109 or adequate score on the Course Placement Evaluation</i>		
ENG 116 Technical Writing (3) <i>Pre-requisite: ENG 111</i>		
SPCH 130 Public Speaking (3) <i>Pre-requisite: ENG 109 or adequate score on the Course Placement Evaluation</i>		
<b>AREA II: MATHEMATICS (4 Credits)</b>		
MATH 162E Calculus I For Engineers (4) <i>Pre-requisites: MATH 155 or adequate score on the Course Placement Evaluation</i>		
<b>AREA III: LABORATORY SCIENCES (8 Credits)</b>		
ENGR 215 Physics for Engineers I (2) <i>Pre-requisite: ENGR 121L</i>		
ENGR 216L Physics for Engineers II (3) <i>Pre-requisite: ENGR 215</i>		
ENGR 217L Physics for Engineers III (3) <i>Pre-requisite: ENGR 215</i>		
<b>AREA IV: SOCIAL/BEHAVIORAL SCIENCES (6 - 9 Credits)</b> <i>Students must complete a minimum of 15 credit hours spread between areas IV and V.</i>		

<b>Select one class from the following list:</b>		
ECON 201 Microeconomics (3) <i>Pre-requisite: ENG 109 or adequate score on the Course Placement Evaluation</i>		
<b>OR</b>		
ECON 200 Macroeconomics (3) <i>Pre-requisite: ENG 109 or adequate score on the Course Placement Evaluation</i>		
Electives (3-6 Credits) <b>You must select courses from <i>different discipline areas</i> (see Catalog Page 26)</b>		
Elective (3)		
Elective (3)		
* Plus, topic courses with student advisor's approval		
<b>AREA V: HUMANITIES AND FINE ARTS (6 - 9 Credits)</b> <i>Students must complete a minimum of 15 credit hours spread between areas IV and V.</i>		
Second Language Elective (3)		
Electives (3-6 Credits) <b>You must select courses from <i>different discipline areas</i> (see Catalog Page 27)</b>		
Elective (3)		
Elective (3)		
<b>AREA VI: FIRST YEAR EXPERIENCE (3 Credits)</b>		
FYE 101 Freshman Year Experience (3) <i>Pre-requisite: None</i>		
<b>SUPPORT COURSES (8 Credits)</b>		
ENGR 121L Introductory Math for Engineering Applications I (2) <i>Pre-requisite: MATH 150 or adequate score on the Course Placement Evaluation</i>		
ENGR 122L Introductory Math for Engineering Applications II (2) <i>Pre-requisite: ENGR 121/L</i>		
MATH 163E Calculus II For Engineers (4) <i>Pre-requisites: MATH 162E</i>		
<b>PROGRAM REQUIREMENTS (76 Credits)</b>		
<b>Electromechanical Engr. Tech. Courses (69 Credits)</b>		
ENGR 110L Introduction to Engineering (2) <i>Pre-requisite: None</i>		
DRFT 100 Computer Aided Drafting I (4) <i>Pre-requisite: None</i>		
EECE 152 Computer Programming I (3) <i>Pre-requisite: None</i>		
MET 201 Applied Mechanics I (3) <i>Pre-requisite: ENGR 215</i>		
MET 301 Applied Mechanics II (2) <i>Pre-requisite: MET 201</i>		
MET 310 Manufacturing Processes and Automation (3) <i>Pre-requisite: DRFT 100</i>		
EET 200/L Electrical Systems I with Lab (2) <i>Pre-requisite: ENGR 217L</i>		
EET 201/L Digital Systems I (2) <i>Pre-requisite: ENGR 121L</i>		
EET 300/L Electrical Systems II with Lab (4) <i>Pre-requisite: EET 200/L</i>		
EET 400/L Control Systems and Instrumentation with Lab (4) <i>Pre-requisite: EET 300/L</i>		

EMET 400 Advanced Electro-Mechanical Design (3) <i>Pre-requisite: DRFT 100, EET 200/L, and MET 302</i>		
MET 303 Thermodynamics (3) <i>Pre-requisite: ENGR 216L</i>		
MET 317 Fluid Mechanics (3) <i>Pre-requisite: MET 301</i>		
EMET 402 Robotics (3) <i>Pre-requisite: EET 400</i>		
MET 421 Heat Transfer (3) <i>Pre-requisite: MET 317</i>		
ENGR 480 Engineering Management and Project Management (4) <i>Pre-requisite: Junior status or permission of academic advisor</i>		
EMET 490 Capstone I (3) <i>Pre-requisite: Senior status</i>		
Lower/Upper Division Engineering or Technical Elective (15)		
<b>Solar Energy Concentration (7 Credits)</b>		
EMET 454 Solar Thermal Applications and Energy Storage (4) <i>Pre-requisite: EET 200/L and PHYS 215/L</i>		
EECE 472 Photovoltaic Devices (3) <i>Pre-requisite: EET 200/L</i>		
<b>TOTAL CREDITS 123</b>		
<b>ADVISOR APPROVAL</b>	<b>DATE</b>	

## **SUGGESTED SEQUENCE OF COURSES**

### **FIRST SEMESTER (16 Credits)**

ENGR 121L	Introductory Mathematics for Engineering Applications I (2)
ENGR 215	Physics for Engineers I (2)
ENGR 110L	Introduction to Engineering (2)
DRFT 100	Computer Aided Drafting I (4)
Elective	Lower Division Engineering or Tech (3)
FYE 101	Freshman Year Experience (3)

### **SECOND SEMESTER (14 Credits)**

EECE 152L	Computer Programming I (3)
ENGR 122L	Introductory Mathematics for Engineering Applications II (2)
MET 201	Applied Mechanics I (3)
Elective	Lower Division Engineering or Tech (3)
Elective	Lower Division Engineering or Tech (3)

### **THIRD SEMESTER (16 Credits)**

MATH 162E	Calculus I for Engineers (4)
ENGR 216L	Physics for Engineers II (3)
ENGR 217L	Physics for Engineers III (3)
HFA	Elective (3)
ENG 111	English Composition I (3)

### **FOURTH SEMESTER (16 Credits)**

MET 301	Applied Mechanics II (2)
EET 200L	Electrical Systems I with Lab (2)
EET 201L	Digital Systems with Lab (2)
MATH 163E	Calculus II for Engineers (4)
ENG 116	Technical Writing (3)
SBS	Elective (3)

### **FIFTH SEMESTER (16 Credits)**

MET 303	Thermodynamics (3)
EET 300/L	Electrical Systems II with Lab (4)
MET 302	Strength and Properties of Materials (3)
SPCH 130	Public Speaking (3)
Elective	Lower/Upper Division Engineering or Tech (3)

### **SIXTH SEMESTER (17 Credits)**

MET 317	Fluid Mechanics (3)
EET 400/L	Control Systems and Instrumentation with Lab (4)
ECON 201/200	Microeconomics (3) or Macroeconomics (3)
ENGR 480	Engineering Management and Project Management (4)
Elective	Lower/Upper Division Engineering or Tech (3)

### **SEVENTH SEMESTER (15 Credits)**

EECE 472	PV Devices (3)
EMET 402	Robotics (3)
EMET 400	Advanced Electro-Mechanical Design (3)

MET 421 Heat Transfer (3)  
MET 310 Manufacturing Processes and Automation (3)

**EIGHTH SEMESTER (13 Credits)**

EMET 454 Solar Thermal and Electrical Energy Storage Applications (4)  
HFA/SBS Elective (3)  
EMET 490 Capstone I (3)  
Second Language (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
FALL SEMESTER	SPRING SEMESTER	SUMMER
Total Units	Total Units	Total Units