ENGINEERING, A.S.

Location(s): AL, AN, LO, WO
NOVA Code: 8310

Purpose

The curriculum is designed to prepare the student to transfer to a bachelor's degree program in an Engineering discipline. Some of the Engineering disciplines are aerospace engineering, biomedical engineering, chemical engineering, civil engineering, computer engineering, electrical engineering, mechanical engineering, and systems engineering. It is highly recommended that students consult with an Engineering faculty advisor prior to selecting their courses to ensure maximum transferability.

Transfer Information

Students are advised to work closely with the faculty and counseling staff for program and course scheduling. Electives should be chosen carefully to meet requirements of the transfer institution. The responsibility for proper course selection rests with the student.

This program is aligned with the Transfer Virginia common curriculum. Students are strongly encouraged to consult their academic advisor and review transfer options using the Transfer Virginia Portal, Where Can This Degree Transfer (https://www.transfervirginia.org/degrees/F401E73069E411EDB960122FC3C6BCDE/#:~:text=Where%20Can%20This%20Degree%20Transfer).

Recommended Preparation

High school courses: 4 units of English, 2 units of algebra, 1 unit of geometry, 1 unit of trigonometry, 1 unit of laboratory science (chemistry or physics).

Completion Requirements

Grades of "C" and above are required in courses intended to be transferred for credit to a baccalaureate degree-granting college/university.

Two Years

Course	Title	Credits
1st Semester		
ECO 202	Principles of Microeconomics	3
EGR 121	Foundations of Engineering	2
ENG 111	College Composition I	3
MTH 263	Calculus I [1]	4
Physical or Life Science Elective w/Lab (https://catalog.nvcc.edu/general-education-electives/#ge_phy_life_sci_elec) [2]		4
SDV 100 or SDV 101	College Success Skills or Orientation to:	1
	Credits	**17**
2nd Semester		
ENG 112	College Composition II	3
MTH 264	Calculus II	4
Humanities/Fine Arts Elective (https://catalog.nvcc.edu/general-education-electives/#ge_hum_fa_elect) [3]		3
Physical or Life Science Elective w/Lab (https://catalog.nvcc.edu/general-education-electives/#ge_phy_life_sci_elec) [2]		4
Engineering/Technical Elective (p. 1) [4]		3-4
	Credits	**17-18**
3rd Semester		
MTH 267	Differential Equations	3
HIS Elective (https://catalog.nvcc.edu/general-education-electives/#ge_hist_elec)		3
Engineering/Technical Elective (p. 1) [4]		4
Engineering/Technical Elective (p. 1) [4]		3-4
Engineering/Technical Elective (p. 1) [4]		3-4
	Credits	**16-18**
4th Semester		
Select one of the following: [5]		3-4
MTH 265	Calculus III	
MTH 266	Linear Algebra	
MTH 288	Discrete Mathematics	
Engineering/Technical Elective (p. 1) [4]		3-4
Engineering/Technical Elective (p. 1) [4]		3-4
Engineering/Technical Elective (p. 1) [6]		3-4
Humanities/Fine Arts Elective (https://catalog.nvcc.edu/general-education-electives/#ge_hum_fa_elect) [3]		3
	Credits	**15-19**
	Total Credits	**65-72**

Electives should be chosen with the advice of an academic advisor to meet the requirements of the intended transfer institution.

1. Students who do not directly place into MTH 263 Calculus I will begin with MTH 167 PreCalculus with Trigonometry (or MTH 161 PreCalculus I and MTH 162 PreCalculus II).
2. Plan to take two courses out of these three (CHM 111 General Chemistry I, PHY 241 University Physics I, PHY 242 University Physics II). For most engineering disciplines, all three are required. The third science will be taken as part of the Engineering/Technical Electives. If your engineering discipline does not require CHM 111 General Chemistry I, then take PHY 241 University Physics I in the second semester.
3. Students must choose courses from two of the following three areas: Fine Arts, Humanities, and Literature. Credit will not be awarded for taking two courses from the same area.
4. There should be 22 to 26 credits of Engineering/Technical electives which results in six or seven classes. These Engineering/Technical Electives (p. 1) should be chosen carefully in conjunction with an advisor. Consult the requirements of the transfer institution.
5. Math course should be chosen based on engineering discipline and transfer institution. For most engineering disciplines, more than one course will be required. MTH 283 Probability and Statistics may be substituted as Engineering/Technical Elective. Please contact a faculty or academic advisor to request a course substitute. The additional math courses needed will fall under the Engineering/Technical Elective.
6. Select any course listed under footnote #3. This elective is not needed if selections for all other requirements total 65 credits or more.

Engineering/Technical Electives

Code	Title	Credits
BIO 101	General Biology I	4
BIO 206	Cell Biology	4
CHM 111	General Chemistry I	4
CHM 112	General Chemistry II	4
CHM 241	Organic Chemistry I	3
CHM 242	Organic Chemistry II	3
CHM 245	Organic Chemistry I Laboratory	2
CHM 246	Organic Chemistry II Laboratory	2

CIV 240	Fluid Mechanics and Hydraulics	3
CIV 225	Soil Mechanics	3
CIV 226	Soil Mechanics Laboratory	1
CIV 280	Introduction To Environmental Engineering	3
CSC 221	Introduction to Problem Solving and Programming	3
CSC 222	Object Oriented Programming	4
CSC 223	Data Structures and Analysis of Algorithms	4
CST 100	Principles of Public Speaking	3
CST 110	Introduction to Human Communication	3
EGR 122	Engineering Design	3
EGR 125	Introduction to Computer Programming for Engineers	4
EGR 206	Engineering Economics	3
EGR 240	Statics	3
EGR 245	Dynamics	3
EGR 246	Mechanics of Materials	3
EGR 248	Thermodynamics For Engineering	3
EGR 270	Fundamentals of Computer Engineering	4
EGR 271	Electric Circuits I	4
EGR 272	Electric Circuits II	4
EGR 280	Foundations of Environmental Engineering	3
EGR 282	Hydraulics for Civil and Environmental Engineering	3
GOL 105	Physical Geology	4
MTH 265	Calculus III	4
MTH 266	Linear Algebra	3
MTH 288	Discrete Mathematics	3
PHY 242	University Physics II	4
PHY 243	Modern Physics	3