

# Engineering – Associate of Science Degree (831)

**Purpose** Engineers are the planners and designers of the technological systems that are the backbone of our modern society. They apply principles of science and mathematics to meet the needs or solve the problems of humankind. These problems typically are multifaceted and involve the interplay of technological, economic, environmental, sociological, and political components. For this reason, the engineer requires a background in the humanities and Social Sciences as well as in mathematics and natural sciences.

**Occupational Objectives** The Associate of Science degree program in Engineering is designed for persons who plan to transfer to a four-year college or university to complete a baccalaureate degree. The following engineering fields are supported by this program: aerospace and ocean, biological systems, chemical, civil and environmental, electrical and computer, engineering science and mechanics, industrial and systems engineering, material science, mechanical, mining and minerals.

In order to prepare for junior class standing at a four-year college or university, the student usually must complete a program at Virginia Western that is comparable in length and course content to the first two years of the program at the four-year institution. Students are urged to acquaint themselves with the requirements of the department in the college or university to which transfer is contemplated and also to consult with the counseling office of Virginia Western in planning their program and selecting electives.

## Curriculum and Other Requirements

		<b>Credits</b>
CHM 111 <sup>5</sup>	College Chemistry I	4
EGR 120**	Introduction to Engineering	2
EGR 124**	Introduction to Engineering and Engineering Methods	3
EGR 126**	Computer Programming for Engineers [C++]	3
EGR 140*	Engineering Mechanics–Statics	3
ENG 111-112	College Composition I-II	6
HLT/PED <sup>1</sup>	Health or Physical Education	2
MTH 175-176*	Calculus of One Variable I-II	6
MTH 177*	Introductory Linear Algebra	2
MTH 178*	Topics in Analytic Geometry	2
MTH 277*	Vector Calculus	4
MTH 291*	Differential Equations	3
PHY 241-242	University Physics I-II	8
SDV 101	Orientation to Engineering and Engineering Technology	1
CST 100	Principles of Public Speaking	3
E <sup>4</sup>	Engineering/Science Elective	6-8
E <sup>3</sup>	Humanities/Fine Arts Elective	3
E <sup>2</sup>	Social Science Elective	6

### Total Minimum Credits for Degree

**67-69**

<sup>1</sup> Two credits of Health (HLT) or Physical Education (PED) are required of all students. Consult approved Health courses in the Description of Courses for selection. Veterans with an honorable discharge will be awarded HLT/PED credit based on military service.

<sup>2</sup> Social Science electives must be selected from the “Approved List of Transfer courses.” If the student is transferring to a four-year institution, the student should select the Social Science courses at VWCC that will satisfy the Social Science requirements at the four-year institution.

<sup>3</sup> Humanities/Fine Arts elective must be chosen from the “Approved List of Humanities Transfer Courses.” A two-semester sequence of the same course is strongly recommended. If planning on transfer, contact four-year institution for requirements.

<sup>4</sup> The following are suggested Engineering/Science electives for Engineering majors: Mechanical Engineering: EGR 245-246, Civil Engineering: EGR 206/246, Electrical Engineering: EGR 206/251-255, MTH 285, or MTH 287.

<sup>5</sup> Chemical engineering majors should take CHM 112.

\* This course has a prerequisite. Prerequisites for all courses are listed in the course description section at the back of the catalog.

\*\*This course has a co-requisite. Co-requisites for all courses are listed in the course description section at the back of the catalog.

### Suggested Course Sequence

#### Fall

CHM 111  
EGR 124  
ENG 111  
MTH 175  
MTH 177  
SDV 101  
HLT/PED

#### Fall

MTH 277  
PHY 241  
Engineering Science Elective  
Humanities/Fine Arts Elective  
Social Science Elective  
HTL/PED

#### Spring

EGR 120  
EGR 126  
EGR 140  
ENG 112  
MTH 176  
MTH 178

#### Spring

MTH 291  
PHY 242  
CST 100  
Engineering Science Elective  
Social Science Elective

## Engineering, continued – Associate of Science Degree (831)

### Admission Requirements

Applicants must meet the general requirements for admission to the college. Developmental courses are required for students with deficiencies in English and mathematics.

Students who do not place into college-level English on the placement test will be required to take developmental courses (i.e., ENG 1, ENG 3, ENG 4, ENG 7).

Students who have not completed Pre-calculus or Trigonometry in high school with a grade of “A” within the past three years, or who have not completed a college level Pre-calculus or Pre-calculus with Trigonometry (or equivalent) course will be required to take the placement test.

Students who do not place above Algebra II (MTH 4) and into the pre-requisite course for calculus (MTH 163 or 166) on the placement test will be required to take developmental courses.

### Program Requirements

Based on an articulation agreement with Virginia Tech, students who have completed the Engineering AS degree with a cumulative GPA of 3.0 or greater are guaranteed admission to the general engineering program at Virginia Tech. Students must take ENG 111 in the first semester of classes.