

Virginia Tech Advising Guide

BRCC Associate of Science Degree – Engineering Specialization Curriculum Outline
Advising Guide for Engineering at Virginia Tech

Advising notes before proceeding (revised for 2021 – 2022)

BRCC is a participant in the [VCCS-wide articulation agreement between VCCS colleges and the VA Tech College of Engineering](https://www.vccs.edu/transfer-programs/) [https://www.vccs.edu/transfer-programs/].

Depending on your intended major, you should take the suggested electives to ensure that you will be able to enter the upper-level classes at Virginia Tech. Here is a list of suggested electives:

Major	Suggested Electives
Chemical Engineering	CHM 112, 241**, 242**, 243**, 244**
Civil Engineering	ECO 202*; EGR 140, 206, 245, 246
Computer Science	CSC 201, 202; MTH 288; CST 100 or 110***;
Computer Engineering	EGR 126, 251 (through NVCC distance); MTH 288
Construction Engineering and Management	ECO 201*, 202*; EGR 140, 246
Electrical Engineering	EGR 126, 251 (through NVCC distance)
Industrial and Systems Engineering	EGR 126, 140, 206
Mechanical Engineering	EGR 140, 245, 246, 251 (through NVCC distance)

*Choose ECO 201 or 202 as Social Science Elective

**BRCC no longer teaches CHM 241, 242– may be taken at PVCC and substituted into the degree (see a program advisor)

*** Requires program substitution – ask a program advisor

Students seeking academic advising for this major are encouraged to meet with Ms. Rajan Shore (Engineering/Computer Science advisor, E112, shorer@brcc.edu) and BRCC Professors Mr. Bob Zickefoose (Engineering, T103, zickefooseb@brcc.edu) or Dr. Jonathan Cook (Physics, T205, cookj@brcc.edu).

Additionally, [Ms. Christi Boone](http://www.eng.vt.edu/personnel/christi-boone) [http://www.eng.vt.edu/personnel/christi-boone] serves as the Engineering transfer advisor for students at VA Tech. Ms. Boone visits the BRCC campus once a year to speak with prospective VA Tech Engineering majors, and is available by email to help with VA Tech specific questions.

Progression through the AS – Science – Engineering Program

Progression through the AS Science – Engineering specialization degree depends on the student's initial level of math placement. If you do not already have credit for MTH 161/162 or MTH 167 and would like to be considered for direct placement into Calculus on the basis of your high school precalculus coursework, please make an appointment with an advisor to discuss. Students with a precalculus placement for either MTH 161 or MTH 167 are encouraged to attempt MTH 167 if they have a strong background in high school mathematics (A and B grades for all high school mathematics through at least algebra II/trigonometry, with a high school course in precalculus or functions preferred).

With a MTH 263 start, an AS – Science – Engineering Degree can be completed in 2 years, with four semesters at 17 credits each. With a MTH 167 start, it is still possible to complete in two years with a catch-up Summer semester. While typical for Engineering degrees, this is an extremely heavy credit load, and is not feasible for many students. Keep in mind that your first priority as a student seeking to transfer to a four year Engineering program is **academic excellence**, and not finishing quickly – Virginia Tech is expecting you to maintain A's and B's in your math, science, and Engineering coursework. Many students opt to spread out the coursework for the AS over three years to make the load more manageable, or complete some of their General Education requirements during the Summer sessions to reduce the credit load in Fall/Spring.

The following pages of the guide show pathways for

- A two year plan for students who start in MTH 263
- A two year plan for students who start in MTH 167
- A three year plan for students who start in MTH 161

The AS – Science – Engineering Specialization requires a minimum of 67 credits to complete. However, in order to meet BRCC's Associate of Science degree requirements, meet all prerequisites to those requirements, *and* fulfill Virginia Tech recommended transfer course requirements for Engineering, students may need to complete additional credits at BRCC depending on their mathematics placement.

The Engineering Specialization truly starts when the student reaches MTH 263, as Calculus is the gateway to all Engineering courses except Introduction to Engineering (EGR 121) and EGR 206 (Engineering Economics). Students in Precalculus are “pre-Engineering” and may wish to declare the more general AS-Science initially before committing to the Specialization.

All mathematics, science, and Engineering courses should be taken in the order they appear, in the semester they appear. Math, science, and Engineering are strictly sequenced in terms of prerequisites, and have limited course offerings. When you see a course appearing in a specific semester in the guide above (e.g. EGR 140 always appears as Spring class), assume unless confirmed otherwise that that is the *only* semester in which the course is offered, and if you miss it, you will not be able to schedule it until the following year.

MTH 263 start (2 years to completion)

First Semester (Fall I)

Course #	Course Description	Credits
ENG 111	College Composition I	3
HIS _____	History (101, 102, 111, 112, 121, or 122)	3
MTH 263	Calculus I	4
CHM 111	General Chemistry I	4
EGR 121	Foundations of Engineering	2
SDV _____	Student Development (SDV 101 "for STEM" strongly recommended, but SDV 100 may be used)	1
		17

Second Semester (Spring I)

Course #	Course Description	Credits
ENG 112	College Composition II	3
MTH 264	Calculus II	4
EGR 122	Engineering Design	3
_____	Engineering/Technical Elective (see https://catalog.brcc.edu/programs-study/science-engineering/#approvedelectivestext)	3-4
_____	Social Science Elective	3
		16-17

Third Semester (Fall II)

Course #	Course Description	Credits
ENG _____	Literature Elective	3
PHY 241	University Physics I	4
MTH 265	Calculus III	4
_____	Engineering/Technical Elective (see https://catalog.brcc.edu/programs-study/science-engineering/#approvedelectivestext)	3-4
_____	Humanities/Fine Arts Elective	3
		17-18

Fourth Semester (Spring II)

Course #	Course Description	Credits
MTH 267	Differential Equations	3
MTH 266	Linear Algebra	3
PHY 242	University Physics II	4
_____	Engineering/Technical Elective (see https://catalog.brcc.edu/programs-study/science-engineering/#approvedelectivestext)	3-4
_____	Engineering/Technical Elective (see https://catalog.brcc.edu/programs-study/science-engineering/#approvedelectivestext)	3-4
		16-17

MTH 167 start (2 years to completion with summer)

First Semester (Fall I)

Course #	Course Description	Credits
ENG 111	College Composition I	3
HIS _____	History (101, 102, 111, 112, 121, or 122)	3
MTH 167	Precalculus with Trigonometry	5
CHM 111	General Chemistry I	4
EGR 121	Foundations of Engineering	2
SDV _____	Student Development (SDV 101 "for STEM" strongly recommended, but SDV 100 may be used)	1
		18

Second Semester (Spring I)

Course #	Course Description	Credits
ENG 112	College Composition II	3
MTH 263	Calculus I	4
EGR 122	Engineering Design	3
_____	Engineering/Technical Elective (see https://catalog.brcc.edu/programs-study/science-engineering/#approvedelectivestext)	3-4
_____	Social Science Elective	3
		16-17

Summer Catch-up

Course #	Course Description	Credits
MTH 264	Calculus II	4

Third Semester (Fall II)

Course #	Course Description	Credits
ENG _____	Literature Elective	3
PHY 241	University Physics I	4
MTH 265	Calculus III	4
_____	Engineering/Technical Elective (see https://catalog.brcc.edu/programs-study/science-engineering/#approvedelectivestext)	3-4
_____	Humanities/Fine Arts Elective	3
		17-18

Fourth Semester (Spring II)

Course #	Course Description	Credits
MTH 267	Differential Equations	3
MTH 266	Linear Algebra	3
PHY 242	University Physics II	4
_____	Engineering/Technical Elective (see https://catalog.brcc.edu/programs-study/science-engineering/#approvedelectivestext)	3-4
_____	Engineering/Technical Elective (see https://catalog.brcc.edu/programs-study/science-engineering/#approvedelectivestext)	3-4
		16-17

MTH 161 start (3 years to completion)

Note that starting in MTH 161 will require three years to complete the math/physics sequence, and there is no way to do this at a full time load for all six semesters. Plan accordingly.

First Semester (Fall I)

Course #	Course Description	Credits
ENG 111	College Composition I	3
MTH 161	Precalculus I	3
SDV	Student Development (SDV 101 "for STEM" strongly recommended, but SDV 100 may be used)	1
		7

Second Semester (Spring I)

Course #	Course Description	Credits
ENG 112	College Composition II	3
MTH 162	Precalculus II	3
HIS ____	History (101, 102, 111, 112, 121, or 122)	3
		9

Third Semester (Fall II)

Course #	Course Description	Credits
MTH 263	Calculus I	4
CHM 111	College Chemistry I	4
EGR 121	Foundations of Engineering	2
ENG ____	Literature Elective	3
		13

Fourth Semester (Spring II)

Course #	Course Description	Credits
EGR 122	Engineering Design	3
MTH 264	Calculus II	4
_____	Engineering/Technical Elective (see https://catalog.brcc.edu/programs-study/science-engineering/#approvedelectivestext)	3-4
_____	Humanities/Fine Arts Elective	3
		13-14

Fifth Semester (Fall III)

Course #	Course Description	Credits
PHY 241	University Physics I	4
MTH 265	Calculus III	4
_____	Social Science Elective	3
_____	Engineering/Technical Elective (see https://catalog.brcc.edu/programs-study/science-engineering/#approvedelectivestext)	3-4
		14-15

Sixth Semester (Spring III)

Course #	Course Description	Credits
MTH 267	Differential Equations	3
MTH 266	Linear Algebra	3
PHY 242	University Physics II	4
_____	Engineering/Technical Elective (see https://catalog.brcc.edu/programs-study/science-engineering/#approvedelectivestext)	3-4
_____	Engineering/Technical Elective (see https://catalog.brcc.edu/programs-study/science-engineering/#approvedelectivestext)	3-4
		16-18

Finally and most importantly

Come in and meet your program professors at the beginning of your program! Professors Zickefoose and Cook (contact info on the first page) will work with Engineering students to help them plan their courses, and provide advice on what is needed to successfully transfer to Virginia Tech.