

## Engineering Science (Transfer) (ENR)

This program is for students planning to transfer upon graduation from Dutchess Community College to a four-year college granting a Bachelor of Science in an engineering discipline. Dutchess graduates readily transfer to established and respected educational institutions as third-year engineering students. Dutchess Community College's engineering science program is designed so that our students develop the skill set needed to succeed in competitive four-year engineering programs in a variety of engineering disciplines. Our engineering science program provides the appropriate mix of math, science, engineering and liberal arts as benchmarked by ABET (Accreditation Board of Engineering and Technology) and recommended by TYESA (Two-Year Engineering Science Association). The Dutchess Community College Engineering Science program incorporates the following competencies: problem solving, design, teamwork, communication skills, quality and continuous improvement, and computer literacy.

Six advisement tracks are available to students to help them transfer to a specific engineering major at a four-year university or college.

- # Biomedical Engineering
- # Computer Engineering
- # Chemical Engineering
- # Electrical Engineering
- # Civil and Environmental Engineering
- # Mechanical and Aeronautical Engineering

It is recommended that students entering this program have completed high school chemistry, physics, and four units of high school mathematics. Students without current college-preparatory courses in these areas may need more than two years to complete the engineering science program.

The Associate in Science (A.S.) degree is awarded upon completion of the requirements of this program. Upon successful completion of the Associate in Science (A.S.) degree in Engineering Science (ENR):

- Students will demonstrate oral communication skills in a clear and organized manner using appropriate verbal and nonverbal communication techniques with regard to subject, purpose and audience.
- Students will produce writing that is well organized, well developed and clear.
- Students will apply the scientific method, develop hypotheses, analyze results and draw conclusions.
- Students will work with graphical, numerical or symbolic models to solve problems and interpret results.
- Students will demonstrate the ability to use technology and software applications to produce an output or perform analyses appropriate to their academic program/discipline.
- Students will formulate or evaluate arguments, problems or opinions and arrive at a solution, position or hypothesis based on carefully considered evidence.

Courses should be selected with an advisor.

### First Semester

Course No.	Descriptive Title	Credit Hours
ENG 101	Composition I	3

CHE 121	General Chemistry I	4
MAT 221	Calculus I	4
ENR 101	Introduction to Engineering	2
ENR 100	Engineering Technology Introductory Seminar	1
ENT 131	Technical Drawing	1
<b>TOTAL (a)</b>		<b>15</b>

### Second Semester

Course No.	Descriptive Title	Credit Hours
ENG 102	Composition II	3
WFE 101	Lifetime Wellness and Fitness	3
PHY 151	Calculus-Based Physics I	4
MAT 222	Calculus II	4
ENR 102	Computer Programming for Engineers (b)	3
<b>TOTAL (b)</b>		<b>17</b>

### Third Semester

Course No.	Descriptive Title	Credit Hours
PHY 152	Calculus-Based Physics II	4
MAT 223	Calculus III	4
ENR 208	Engineering Statics	3
Technical Elective (c)		3-4
BHS 103	Social Problems in Today's World	3
<b>TOTAL</b>		<b>17-18</b>

### Fourth Semester

Course No.	Descriptive Title	Credit Hours
PHY 251	Engineering Physics III	4
MAT 224	Differential Equations	4
American History (Appendix D)		3
Advanced Technical Electives (d)		6-8
<b>TOTAL</b>		<b>17-19</b>

a. In addition to the listed first semester course load, Electrical and Computer Engineering students should also take ELT 115. Biomedical and Chemical Engineering students should also take WFE 101.

b. In addition to the second semester course load, Biomedical and Chemical Engineering students should take CHE 122.

c. The courses that apply as introductory technical electives are ENR 201, ENR 215, BIO 105 and CHE 231.

Biomedical Engineering take BIO 105

Electrical Engineering take ENR 201

Chemical Engineering take CHE 231 Environmental Engineering by advisement

Civil Engineering take ENR 215

Mechanical Engineering take ENR 201

Computer Engineering take ENR 201

d. The courses that apply as advanced technical electives are ENR 204, ENR 207, ENR 209, ENR 220, MAT 214, BIO 106, and CHE 232.

Biomedical Engineering take BIO 106 and ENR 207

Electrical Engineering ENR 209 and ENR 220

Chemical Engineering take CHE 232 and ENR 207

Environmental Engineering ENR 209 and by advisement

Civil Engineering take ENR 209 and ENR 204

Mechanical Engineering take ENR 209 and ENR 204 or ENR 207

Computer Engineering take ENR 220 and MAT 214