PROGRAMS

ASSOCIATE IN ENGINEERING (A10500)

The Associate in Engineering degree is designed for students who wish to transfer to a state funded university with a Bachelor of Engineering program and earn a Bachelor of Science in Engineering. Baccalaureate Engineering Programs within the UNC system are offered at: East Carolina University, North Carolina Agricultural and Technical University, North Carolina State University, University of North Carolina at Charlotte, and Western Carolina University.

The Associate in Engineering shall be granted for a planned program of study consisting of a minimum of 60 and a maximum of 61 semester hours of college transfer courses. Within the degree program, the institution shall include opportunities for the achievement of competence in reading, writing, oral communication, fundamental mathematical skills, and basic computer use. More specifically, students foster a greater understanding of reading comprehension, communication, and critical thinking as student learning outcomes.

The degree plan includes required general education and prerequisite courses that are acceptable to all state funded Bachelor of Engineering programs. Students who follow the degree progression plan will meet the entrance requirements at all of the North Carolina public Bachelor of Science Engineering programs. Associate in Engineering graduates may then apply to any of these programs without taking additional and sometimes duplicative courses. Admission to Engineering programs is highly competitive and admission is not guaranteed. To be eligible for the transfer of credits under the Associate in Engineering to the Bachelor of Science in Engineering Articulation Agreement (A.E. to B.S.E. AA), A.E. graduates must obtain a grade of "C" or better in each course **and** an overall GPA of at least 2.5 on a 4.0 scale.

Associate Degree Program

Courses **Semester Hours**

GENERAL EDUCATION (45-46 SHC)*..... 45-46

The general education courses include study in the areas of English composition; humanities and fine arts; social and behavioral sciences; natural sciences and mathematics.

UNIVERSAL GENERAL EDUCATION TRANSFER COMPONENT (UGETC) Courses that are not classified as UGETC are italicized

English Composition (6 SHC) 6

Two English composition courses are required:

ENG-111 and ENG-112

Humanities/Fine Arts and Communication (6 SHC) 6

Humanities: Choose one:

Literature (ENG-231, 232, 241, 242)

Philosophy (PHI-215, 240)

Fine Arts and Communication: Choose one:

Art (ART-111, 114, 115)

Communication (COM-231)

Music (MUS-110, 112)

Social/Behavioral Sciences (6 SHC)..... 6

One course required:

Economics (ECO-251)

Select second course from the following:

History (HIS-111, 112, 131, 132)

Political Science (POL-120)

Psychology (PSY-150)

Sociology (SOC-210)

Mathematics (12 SHC)..... 12

Calculus I (MAT-271) is the lowest level math course that will be accepted by the engineering programs for transfer as a math credit. Students who are not calculus-ready must take additional math courses.

Calculus (MAT-271, 272, 273) Note: MAT-273 is not a UGETC course.

Natural Sciences (12 SHC)..... 12

Take all of the following:

Chemistry (CHM-151)

Physics (PHY-251, 252)

ADDITIONAL GENERAL EDUCATION HOURS (3-4 SHC)* 3-4

Select one course (not used elsewhere) from the following:

Biology (BIO-111)

Chemistry (CHM-152)**

Communication (COM-110, 231)

Economics (ECO-252)

Geology (GEL-111)**

Humanities (HUM-110)

Philosophy (PHI-240)

Use this table to choose the additional general education course recommended for you major.

Chemical Engineering	Civil Engineering	Mechanical, Aerospace, Industrial and Systems Engineering	Electrical Engineering
BIO-111 CHM-152	BIO-111 COM-231 GEL-111 HUM-110 PHI-240	BIO-111 COM-231 HUM-110 PHI-240	BIO-111 CHM-152 COM-231 HUM-110 PHI-240

TOTAL GENERAL EDUCATION HOURS REQUIRED (45-46 SHC) 45-46

OTHER REQUIRED HOURS (15 SHC)..... 15

Academic Transition (1 SHC)

The following course is required:

ACA-122 College Transfer Success..... 1

Students must complete ACA-122 within the first 30 hours of enrollment.

Pre-major Elective (2 SHC)

EGR-150 Introduction to Engineering..... 2

Other General Education and Pre-major Elective Hours (12 SHC)

Select 12 SHC from the following courses classified as pre-major, elective, or general education courses (not used elsewhere) within the Comprehensive Articulation Agreement. Students should choose courses appropriate to the specific university and engineering major requirements. See recommendations below.

Biology (BIO-111)

Chemistry (CHM-152, 251, 252)

Communication (COM-110, 231)

Computer Science (CSC-134, 151)

Drafting (DFT-170)

Economics (ECO-252)

Engineering Statics (EGR-220)

Geology (GEL-111)

Humanities (HUM-110)

Mathematics (MAT-285)

Physical Education (PED-110)

The following gives specific recommendations for the most popular engineering fields. Consult the Associate in Engineering Coordinator for recommendations for engineering fields not shown below.

Mechanical, Aerospace, and Industrial and Systems Engineering

BIO-111 General Biology I (4 SHC)

One programming course:

CSC-134 C++ Programming (3 SHC) ***or*** CSC-151 JAVA Programming (3 SHC)

DFT-170 Engineering Graphics (3 SHC)

EGR-220 Engineering Statics (3 SHC)

MAT-285 Differential Equations (3 SHC)

Civil Engineering

BIO-111 General Biology I (4 SHC)
One programming course:

CSC-134 C++ Programming (3 SHC) ***or*** CSC-151 JAVA Programming (3 SHC)

DFT-170 Engineering Graphics (3 SHC)
EGR-220 Engineering Statics (3 SHC)

GEL-111 Geology (4 SHC)
MAT-285 Differential Equations (3 SHC)

Chemical Engineering

BIO-111 General Biology I (4 SHC)

CHM-152 General Chemistry II (4 SHC)

CHM-251 Organic Chemistry I (4 SHC)

CHM-252 Organic Chemistry II (4 SHC)

COM-231 Public Speaking (3 SHC)

MAT-285 Differential Equations (3 SHC)

Electrical Engineering

Students interested in pursuing electrial engineering should transfer as soon as possible. Electrical engineering programs require circuits classes not offered at Sandhills Community College. Students who do not transfer early will need 3 years to complete a Bachelor's degree in Electrical Engineering.

BIO-111 General Biology I (4 SHC)

CHM-152 General Chemistry II (4 SHC)

COM-231 Public Speaking (3 SHC)

One programming course:

CSC-134 C++ Programming (3 SHC) ***or*** JAVA Programming (3 SHC)

DFT-170 Engineering Graphics (3 SHC)

MAT-285 Differential Equations (3 SHC)

TOTAL SEMESTER HOURS CREDIT (SHC) IN PROGRAM 60-61***

*Students must meet the receiving university's foreign language and/or health and physical education requirements, if applicable, prior to or after transfer to the senior institution.

Associate in Engineering Course Sequence Example

		Course Hours Per Week		Semester Hours
First Semester (Fall)		Class	Lab	Credit
ACA-122	Transfer & Career Success	0	2	1
ENG-111	Writing and Inquiry	3	0	3
MAT-271	Calculus I	3	2	4
CHM-151	General Chemistry I	3	3	4
EGR-150	Intro to Engineering	1	2	2
	Credit Hours	**10**	**9**	**14**
Second Semester (Spring)				
ENG-112	Writing/Research in the Disc	3	0	3

		Course Hours Per Week		Semester Hours
MAT-272	Calculus II	3	2	4
ECO-251	Prin of Microeconomics	3	0	3
***	Humanities UGETC course	3	0	3
***	Additional Gen Ed Hours	3	0	3-4
	Credit Hours	**15**	**2**	**16-17**
Third Semester (Fall)				
PHY-251	General Physics I	3	3	4
***	Soc/Beh Science UGETC course	3	0	3
***	Other Gen Ed/Pre-major Elective	3	0	3-4
***	Other Gen Ed/Pre-major Elective	3	0	3-4
***	Other Gen Ed/Pre-major Elective	3	0	4
	Credit Hours	**15**	**3**	**17-19**
Fourth Semester (Spring)				
MAT-273	Calculus III	3	2	4
PHY-252	General Physics II	3	3	4
***	Fine Arts/Com UGETC course	2	3	3
***	Other Gen Ed/Pre-major Elective	3	0	2-4
	Credit Hours	**11**	**8**	**13-15**
Total Required Minimum Semester Hours Credit				60

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