



# Engineering- Associate in Science (2020-21 Catalog)

## SEMESTER-BY-SEMESTER PROGRAM MAP FOR FULL-TIME STUDENTS

Courses are listed in preferred order of completion

Plans can be modified to fit student needs by adding more semesters

**Choose your courses with your Advisor.**

<b>Developmental Education Courses (if required)</b>			<input type="checkbox"/>	MATH020	Pre-Algebra
<input type="checkbox"/>	ACLS050	Introduction to Academic Literacy	<input type="checkbox"/>	MATH022	Elementary Algebra
<input type="checkbox"/>	ENGL027	Writing Skills Workshop	<input type="checkbox"/>	MATH026	Intermediate Algebra

Location: B= BETH, M= MROE, S=SBTH, E= ESTN, D= DIST \*subject to change

complete	Course #	Course Title	Credits	Gen Ed	Fall	Winter	Spring	Summer	Pre-requisites / Co-requisites	
Semester 1	<input type="checkbox"/>	COLS101	College Success	1		B, M, D	----	B, M, D	D	
	<input type="checkbox"/>	ENGL101	English I	3	Comm.	B, M, D, E	----	B, M, D, E	B, M, D	PRE: ENGL Placement Policy
	<input type="checkbox"/>	CMTH102	Introduction to Communication	3	Comm.	B, M, D	----	B, M, D	B, M, D	
	<input type="checkbox"/>	MATH180	Calculus I	4	QL	B, M, D	----	B, M, D	B, M, D	PRE: MATH145 or MATH160 or Placement Policy
	<input type="checkbox"/>	CHEM120	General Chemistry I	4	Science	B,M	----	B,M	M	PRE: MATH022 or Placement Policy, 1yr HS Chemistry or CHEM011; ENGL101 eligibility
		Total Semester Credits:	15							
Semester 2	<input type="checkbox"/>	MATH181	Calculus II	4	QL	B,M	----	B,M	B,M	PRE: MATH176 or MATH180 with a C or better or score of 4 or 5 on AP Calculus AB test or 3, 4, or 5 on AP Calc BC test
	<input type="checkbox"/>	PHYS215	Physics for Science & Engineering I	5		B,M	----	B,M	----	PRE or CO: MATH181
	<input type="checkbox"/>	CISC115	Computer Science	4		B,M	----	B,M	----	PRE: MATH026 or Placement Policy
	<input type="checkbox"/>	ENGL151L	English II (Literature) (D)	3	Comm.	B, M, D	----	B, M, D	B, M, D	PRE: ENGL101
		Total Semester Credits:	16							
Semester 3	<input type="checkbox"/>	MATH210	Calculus III	4	QL	B,M	----	B,M	M	PRE: MATH181
	<input type="checkbox"/>	PHYS225	Physics for Science & Engineering II	5		B,M	----	B,M	----	PRE: PHYS215 with a C or better
	<input type="checkbox"/>		Engineering Elective+	3/4		Depends on course selected			Depends on course selected	
	<input type="checkbox"/>		Technical Elective**	3/4		Depends on course selected			Depends on course selected	
		Total Semester Credits:	15/17							
Semester 4	<input type="checkbox"/>	MATH211	Differential Equations	4		B,M	----	B,M	----	PRE: MATH210
	<input type="checkbox"/>		Engineering Elective+	3/4		Depends on course selected			Depends on course selected	
	<input type="checkbox"/>		AH General Education Elective	3	AH	B, M, D	D	B, M, D	B, M, D	Depends on course selected
	<input type="checkbox"/>		SSHB General Education Elective	3	SSHB	B, M, D	D	B, M, D	B, M, D	Depends on course selected
	<input type="checkbox"/>		SIT General Education Elective	3	SIT	B, M, D	D	B, M, D	B, M, D	Depends on course selected
		Total Semester Credits:	16/17							
		Total Degree Credits	62/65							

### General Education Requirements

<input type="checkbox"/>	ENGL151L	Diversity
<input type="checkbox"/>	PHYS215 & PHYS225	Combined Fulfill 1 Writing Intensive Requirement
<input type="checkbox"/>		Writing Intensive (AH, SIT, or SSHB)

### Notes:

Must earn a C or better in the mathematic courses to advance to the next one.

Students should contact potential transfer institutions at least TWO SEMESTERS prior to their desired semester of transfer to ask for suggested courses to complete in the remaining semesters at NCC. Elective selections may be dependent on the student's desired Engineering discipline (Mechanical, Electrical, Computer, Civil, etc.). The Engineering advisor may suggest elective substitutions based on the recommendations from other schools.

\*It is the student's responsibility to be knowledgeable of NCC graduation requirements and to verify transfer requirements with the 4-year institution. Courses listed on the program map are based upon the assumption that prerequisites and courses taken in previous semesters will be successfully completed

Arts & Humanities (AH)
ARTA 100 Art and Visual Thinking
ARTA 101 Art History Survey
CMTH 110 Introduction to the Theatre
CMTH 111 Acting I
CMTH 115 Technical Theatre
CMTH 117 Stagecraft
CMTH 126 The Communication Arts
CMTH 189 Stage Voice and Movement
CMTH 190 Stage Production
CMTH 206 Directing
CMTH 211 Plays: Classical to Contemp. (G-WI)
CMTH 212 Acting II
CMTH 218 Theatre Portfolio
CMTH 220 Introduction to Film
DANC 101 Dance History
DANC 110 Ballet I
DANC 120 Modern Dance I
DANC 130 Jazz I
DANC 210 Ballet II
DANC 220 Modern Dance II
DANC 230 Jazz II
ENGL 201 British Literature I (G-WI)
ENGL 203 Shakespeare (G-WI)
ENGL 205 American Literature I (G-WI)
ENGL 211 Plays: Classical to Contemp. (G-WI)
ENGL 215 Multicultural Adolescent Lit (G-WI)
ENGL 250 Latin American Literature (G-WI)
ENGL 251 British Literature II (G-WI)
ENGL 253 Creative Writing
ENGL 255 American Literature II (G-WI)
ENGL 256 Modern Poetry (G-WI)
ENGL 257 20th Century Lit by Women (G-WI)
ENGL258 Fiction Writing
ENGL 260 Contemporary Literature (G-WI)
ENGL 264 Irish Literature (G-WI)
ENGL 265 African-American Literature (G-WI)
ENGL 267 Poetry Writing
HUMA 121 The American Work Experience (G-WI)
HUMA 140 Intro to Women & Gender Studies (G-WI)
HUMA 150 Nature of the Environment
HUMA210 Creativity and the Origin of Ideas
JOUR 101 Journalism and Society
Modern Language - All MDLA Courses
MUSC 101 Introduction to Music
PHIL 111 On Death and Dying (G-WI)
PHIL 121 World Religions
PHIL 201 Introduction to Philosophy
PHIL 202 Ethics and Moral Problems (G-WI)
PHIL 204 Asian Philosophies
PHIL 211 Ancient Philosophy
PHIL 215 Modern Philosophy
PHIL 225 What is Freedom?

Societies & Institutions Over Time (SIT)
CMTH 221 History of Broadcasting
GEOG 101 World Geography
GEOG 151 Geography of the U.S. and Canada (G-WI)
GLBL 130 Intro to Global Studies
GLBL 160 Field Experience & Acad Research in GS
GLBL 230 Global Studies Capstone
HIST 103 Ancient and Medieval History
HIST 113 American History I (G-WI)
HIST 121 The Black Experience (G-WI)
HIST 123 African Civilization
HIST 140 Modern Chinese History
HIST 153 Found of Mod Euro History, 1300-1815 (G-WI)
HIST 163 American History II
HIST 165 The American Experience of Warfare (G-WI)
HIST 166 Civil War and Reconstruction (G-WI)
HIST 168 History of the Middle East (G-WI)
HIST 173 Mod European History, 1815 to Present (G-WI)
HIST 183 Modern American History 1945-Present
HIST 210 History of Mod Science, 1859 to Present
HIST 211 History of Pennsylvania
INTS 201 Implementing Sustainable Energy System...
INTS 202 The Architecture of the City: Classic to Contemp.
POLS 101 Introduction to Political Science
POLS 105 American Constitutional Law (G-WI)
POLS 110 American National Government (G-WI)
POLS 150 Peace Studies & Conflict Resolution (Study Abroad)
POLS 170 Politics of Modern Turkey (Study Abroad)
POLS 202 International Relations
POLS 205 Women and Politics (G-WI)
POLS 251 State and Local Government (G-WI)
SOCA 102 Cultural Anthropology (G-WI)
SOCA 105 American Ethnicity
SOCA 160 Issues in Contemp.Genocide & Mass Violence

Scientific Study of Human Behavior (SSHB)
ECON 201 Macroeconomics
GEOG 121 Environmental Sustainability (G-WI)
GEOG 140 Investigating Climate Change )
GEOG 271 Intro to Geographic Info Systems
HUMA 250 Research Methods in Social Sciences (G-WI)
INTS 250 Study Abroad
PSYC 103 Introduction to Psychology (G-WI)
PSYC 205 Research Methods
PSYC 230 Introduction to Health Psychology
PSYC 235 Dev Child Psychopathology
PSYC 245 Cognitive Psychology
PSYC 255 Abnormal Psychology
PSYC 258 Developmental Psychology (G-WI)
PSYC 265 Psychology of Sex and Gender
SOCA 103 Principles of Sociology (G-WI)
SOCA 125 Sociology of Families (G-WI)
SOCA 210 Sociology of Gender

Electives for A.A. & A.S. Degrees
Accounting – only ACCT 100, 101, 151, 201, 202, 251
Architecture – only ARCH 100
Art – only ARTA 101, 111, 161, 162, 291, 292, 293
Biological Science – all BIOS except 281, 282, 283
Business – only BUSA 101, 115, 152, 201, 202, 205, 232, 272
Chemistry – only CHEM 105, 120, 135, 220, 225, 251, 260, 291, 292, 293, 294
College Success: COLS101, 120
Communications – all CMTH except 180, 182, 185, 240, 252
Computer/Information Science – only CISC 101, 104, 115, 125, 225, 230, 270
Counseling – only COUN 100, 291, 292, 293
Dance – all DANC
Economics – ECON201, 251G
Education – all EDUC except 105
Engineering – only ENGG 100, 191, 192, 193, 194, 201, 251, 252
English – all ENGL
Geography – all GEOG
Global Studies - GLBL130, 160, 230
Health – only HEAL 150
History – all HIST
Hospitality – only HOSP 101
Humanities – all HUMA
Interdisciplinary Studies – INTS 101, 202, 250
Journalism – only JOUR 103
Mathematics – only MATH 120, 140, 145, 150, 160, 165, 175, 176, 180, 181, 191-194, 202, 210, 211
Modern Language – all MDLA
Music – all MUSC
Nutrition- NUTR105
Philosophy – all PHIL
Physical Education – any PHED courses up to a max of two credits
Physics – all PHYS
Political Science – all POLS
Publishing - 101, 102
Psychology – all PSYC except 221
Sociology/Antropology – all SOCA
Special Education – SPED 160

Engineering Electives +
ENGG201 Statics PRE: PHYS215 w/C or better; CO: MATH210
ENGG251 Strength of Materials PRE: ENGG201 w/C or better
ENGG252 Dynamics PRE: ENGG201
ENGG191, 192, 193, 194 or a course approved by the Engineering Department

Technical Elective **
Any Engineering elective (above list)
ENGG100 Engineering Graphics
CHEM201 Organic Chemistry I PRE: CHEM220
CHEM220 PRE: CHEM120
CISC125 Computer Science II PRE: CISC115
CISC230 Data Structures & Algorithm Anly PRE: CISC125
or course approved by the Engineering Department

Writing Intensive Gen Ed Courses (WI)
BIOS105G Contemporary Biology
CMTH 211G Plays: Classical to Cont
ENGL 201G British Literature I
ENGL 203G Shakespeare
ENGL 205G American Literature I
ENGL 211G Plays: Classical to Contemporary
ENGL 215G Multicultural Adolescent Literature
ENGL 250G Latin American Literature
ENGL 251G British Literature II
ENGL 255G American Literature II
ENGL 256G Modern Poetry
ENGL 257G 20th Century Lit by Women
ENGL 260G Contemporary Literature
ENGL 264G Irish Literature
ENGL 265G African-American Literature
GEOG 121G Environmental Sustainability
GEOG 151G Geography of the US & Canada
HIST 113G American History I
HIST 121G The Black Experience
HIST 153G Found of Mod Euro Hist (1300-1815)
HIST 166G Civil War and Reconstruction
HIST 168G History of the Middle East
HIST 173G Mod Euro History, 1815 to Present
HUMA 121G The American Work Experience
HUMA 140G Intro to Women & Gender Studies
HUMA250G Research Methods in the Social Sci
PHIL 111G On Death and Dying
PHIL 202G Ethics and Moral Problems
POLS 105G American Constitutional Law
POLS 110G American National Government
POLS 205G Women and Politics
POLS 251G State and Local Government
PSYC 103G Introduction to Psychology
PSYC 258G Developmental Psychology
SOCA 102G Cultural Anthropology
SOCA 103G Principles of Sociology
SOCA 125G Sociology of Families

**One General Education Elective (AH, SIT or SSHB) must be taken in Writing Intensive (WI) section. WI course codes ends in "G" (e.g. PHIL202G is Writing Intensive; PHIL202 is not)**

Recommended Electives:  
 AH Elective: PHIL202G Ethics & Moral Problems  
 SSHB Elective: ECON201 Macroeconomics

**Notes:**

- **One course should be designated as Diversity and Global Awareness (D).**
- **One General Education Elective (AH, SIT or SSHB) must be taken in Writing Intensive (WI) section.**
- The program-related writing intensive competency is satisfied by the combination of PHYS 215 and PHYS 225.
- All electives must be chosen from the list of courses which are applicable to AA and AS degrees
- Must earn a C or better in the mathematic courses to advance to the next one.

**Students should contact potential transfer institutions at least TWO SEMESTERS prior to their desired semester of transfer** to ask for suggested courses to complete in the remaining semesters at NCC. Elective selections may be dependent on the student's desired Engineering discipline (Mechanical, Electrical, Computer, Civil, etc..). The Engineering advisor may suggest elective substitutions based on the recommendations from other schools.

**Program Narrative:**

NCC's Engineering program is designed to provide the first two years of courses common to many 4-year engineering schools. Through a broad curriculum of physics, mathematics and engineering electives, students will gain lab and real-world experience and develop skills common to all engineering specialties. The coursework emphasizes critical thinking and study habits. Students ready for transfer will be able to demonstrate competent technical knowledge in engineering-related areas and successfully apply their obtained skills to common engineering problems.

**Program Learning Outcomes:**

- Transfer to a four-year engineering program in any engineering discipline.
- Move directly into industry in a position requiring math, science, and computing skills.
- Demonstrate an ability to work independently and collaboratively as a team.
- Demonstrate basic skills common to all engineering specialties.
- Effectively research and collect data using various published resources and the Internet.
- Analyze and present data in an acceptable, methodical, and standardized manner.
- Demonstrate competent technical knowledge in engineering-related areas.
- Demonstrate competent speaking skills when working with diverse groups.
- Demonstrate observational, integrative, and synthetic skills.
- Demonstrate a basic framework of technical vocabulary and graphical interpretation skills.
- Successfully apply mathematics (algebra, trigonometry, geometry and calculus) to solving engineering problems.

**Transfer Information:**

- Graduates of this program can easily transfer once the program is completed, but students are also able to transfer after taking only a few of the required program classes. Popular transfer institutions for the degree are Lehigh University, Lafayette College, Drexel University, Penn State University, University of Pittsburgh, and Temple University, among others.
- As a graduate of our program you may also choose to transfer into engineering technologies or go directly into industry in a position that requires math, science, and computing skills

**Career Information:**

If you plan to transfer to a four-year institution, we encourage you to check with that institution to see what its requirements are. Then carefully select your courses here with the help of an advisor to be sure that they will meet your transfer school's requirements. Historically, our transfer students generally perform as well or better in their transfer school as they did when they were enrolled at Northampton.

Career Coach Link: <https://northampton.emsicc.com/programs/engineering-as/214379>