



Electromechanical Technology: Automated Systems - Associate in Applied Science (2021-22 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.

| | | | | | |
|--|---------|-----------------------------------|--------------------------|---------|----------------------|
| Developmental Education Courses (if required) | | | <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"/> | ELTC101 | Electrical Fundamentals | 3 | | B | ---- | B | B | |
| | <input type="checkbox"/> | EMEC125 | Process Automation Diagrams – P&ID | 2 | | B | ---- | B | ---- | |
| | <input type="checkbox"/> | EMEC130 | Introduction to Process Control | 3 | | D | ---- | D | ---- | |
| | <input type="checkbox"/> | ENGG117 | Technical Drawings and Specification | 3 | | B | ---- | B | ---- | |
| | <input type="checkbox"/> | ENGL101 | English I | 3 | Comm. | B,M,D | ---- | B,M,D | B,M,D | PRE: ENGL Placement Policy |
| | <input type="checkbox"/> | MATH140 | College Algebra | 3 | QL | B,M,D | ---- | B,M,D | B,M,D | PRE: MATH026 or MATH Placement |
| | | Total Semester Credits: | 18 | | | | | | | |
| Semester 2 | <input type="checkbox"/> | EMEC105 | Introduction to Fluid Power | 3 | | B | ---- | B | ---- | PRE: MATH022 or MATH Placement |
| | <input type="checkbox"/> | EMEC110 | Mechanical Components | 3 | | B | ---- | B | ---- | PRE or CO: ENGG117 |
| | <input type="checkbox"/> | ELTC135 | Electrical Motors and Controls | 4 | | B | ---- | B | B | PRE: ELTC101 |
| | <input type="checkbox"/> | EMEC140 | Sensors, Wiring and Troubleshooting | 1 | | B | ---- | B | ---- | PRE: ELTC101 |
| | <input type="checkbox"/> | ENGL151T | English II (Technical Writing) | 3 | Comm. | B | ---- | B | ---- | PRE: ENGL101 |
| | <input type="checkbox"/> | | AH, SIT, or SSHB General Ed.Elective | 3 | AH, SIT, SSHB | B | ---- | B | ---- | |
| | | Total Semester Credits: | 17 | | | | | | | |
| Semester 3 | <input type="checkbox"/> | CMTH102 | Introduction to Communication | 3 | Comm. | B,M,D | ---- | B,M,D | B,M,D | |
| | <input type="checkbox"/> | EMEC220 | Instrumentation I | 3 | | B | ---- | ---- | ---- | PRE: EMEC125 and EMEC130 |
| | <input type="checkbox"/> | EMEC240 | Industrial Control Systems I | 4 | | B | ---- | ---- | ---- | PRE: ELTC101; PRE or CO: EMEC140 |
| | <input type="checkbox"/> | EMEC205 | Electrical Controls of Fluid Power | 3 | | B | ---- | ---- | ---- | PRE or CO: EMEC105, EMEC110, & ELTC135 |
| | <input type="checkbox"/> | PHYS101 | Physics I | 4 | | B,M,D | ---- | B,D | M,D | PRE: MATH140 with C or better |
| | | Total Semester Credits: | 17 | | | | | | | |
| Semester 4 | <input type="checkbox"/> | EMEC225 | Instrumentation II | 3 | | ---- | ---- | B | ---- | PRE or CO: EMEC220 |
| | <input type="checkbox"/> | EMEC245 | Industrial Control Systems II | 3 | | ---- | ---- | B | ---- | PRE: EMEC240 |
| | <input type="checkbox"/> | EMEC251 | Mechanical Systems | 2 | | B | ---- | B | B | PRE: ENGL101; PRE or CO: Completion of all other |
| | <input type="checkbox"/> | OSAH101 or OSAH102 | Construction Industry Outreach Safety Education* or General Industry Safety Education** | 1 | | B,M,D | D | B,M,D | B,M,D | |
| | <input type="checkbox"/> | | AH, SIT, or SSHB General Ed.Elective | 3 | AH, SIT, SSHB | B,M,D | D | B,M,D | B,M,D | |
| | <input type="checkbox"/> | | Elective | 3 | | B,M,D | D | B,M,D | B,M,D | |
| | | Total Semester Credits: | 16 | | | | | | | |
| | | Total Degree Credits | 68 | | | | | | | |

| General Education Requirements | | |
|--------------------------------|--|-------------------|
| <input type="checkbox"/> | | Diversity |
| <input type="checkbox"/> | | Writing Intensive |

**OSAH102 is the recommended selection

+For the General Education Electives, students must select one course from the list of approved courses in two of the

*One course should be designated as Diversity and Global Awareness (D).

*One elective must be taken a Writing Intensive (WI) section

***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**

following categories: Arts & Humanities (AH); Social Science: Societies and Institution over Time (SIT); Social Science: Scientific Study of Human Behavior (SSHB).

|

| 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 |
| CMTH235 Understanding Culture Through 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 |
| PHIL220 Existentialism |
| PHIL 225 What is Freedom? |

| Societies & Institutions Over Time (SIT) |
|---|
| ARCH 155 Architectural History II 1870-Present (AAS ONLY) |
| 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 |
| FDST110 Food and Identity |
| 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 |

| Diversity (D) Electives |
|---|
| BIOS 126 Environmental Science |
| BIOS 210 Environmental Biology |
| BUSA 115 Intro to International Business |
| CMTH 126 The Communication Arts |
| CMTH 211 Plays: Classical to Contemporary |
| CMTH 215 Intercultural Communication |
| CMTH235 Understanding Culture Through Film |
| DANC 101 Dance History |
| ENGL 151L English II (Literature) |
| ENGL 205 American Literature I |
| ENGL 211 Plays: Classical to Contemporary |
| ENGL 215 Multicultural Adolescent Literature |
| ENGL 250 Latin American Literature |
| ENGL 251 British Literature II |
| ENGL 253 Creative Writing |
| ENGL 255 American Literature II |
| ENGL 256 Modern Poetry |
| ENGL 257 20th Century Lit by Women |
| ENGL 260 Contemporary Literature |
| ENGL 264 Irish Literature |
| ENGL 265 African-American Literature |
| ENGL 267 Poetry Writing |
| GEOG 101 World Geography |
| GEOG 121 Environmental Sustainability |
| GEOG 151 Geography of the U.S. and Canada |
| GEOG 210 Weather and Climate |
| GLBL 130 Intro to Global Studies |
| GLBL 160 Field Experience & Acad Research in GS |
| GLBL 230 Global Studies Capstone |
| HIST 113 American History I |
| HIST 121 The Black Experience |
| HIST 140 Modern Chinese History |
| HIST 165 The American Experience of Warfare |
| HIST 166 Civil War & Reconstruction |
| HIST 168 History of the Middle East |
| HIST 173 Mod Euro History: 1815-Present |
| HIST 183 Modern American History 1945-Present |
| HUMA 121 American Work Experience |
| HUMA 140 Intro to Women and Gender Studies |
| HUMA 150 Nature of the Environment |
| HUMA210 Creativity and The Origin of Ideas |
| INTS 201 Implement Sustain Energy Sys in Dev Com |
| MATH 150 Introductory Statistics |
| Modern Language - All MDLA Courses |
| PHIL111 On Death and Dying |
| PHIL 121 World Religions |
| PHIL 204 Asian Philosophies |
| POLS 101 Introduction to Political Science |
| POLS 105G American Constitutional Law |
| POLS 150 Peace Studies & Conflict Resolution (Study Abroad) |
| POLS 270 Politics of Modern Turkey (Study Abroad) |
| POLS 202 International Relations |
| POLS205 Women & Politics |
| POLS 251 State & Local Government |
| PSYC 230 Introduction to Health Psychology |
| PSYC 258 Developmental Psychology |
| SOCA 102 Cultural Anthropology |
| SOCA103 Principles of Sociology |
| SOCA 105 American Ethnicity |
| SOCA 125 Sociology of Families |
| SOCA 150 Deviance |
| SOCA160 Issues in Cont Genocide & Mass Violence |
| SOCA204 Social Problems |

| Electives for AAS Degrees |
|---|
| All courses except: 0XX-level courses; EARL221, 222 |

Gen. Ed Electives: students must select one course from the list of approved courses in two of the following categories:

- Arts & Humanities (AH)
- Social Science, one Societies and Institutions over Time (SIT)
- Social Science, one Scientific Study of Human Behavior (SSHB)

Note: One course must be designated as Diversity and Global Awareness (D) and one

Program Narrative:

Industrial technology is a high priority occupation. The use of electromechanical automation to control manufacturing processes enables high productivity and competitiveness in the global economy. It also demands well-trained technicians who can service, maintain, install and retrofit this sophisticated equipment. Northampton's Electromechanical Technology Automated Systems A.A.S. degree program is designed to prepare you to enter the maintenance or computer controlled manufacturing environment. Our graduates are qualified to work on such technology as robotics, material handling systems and pharmaceutical packagers as well as most machines and equipment that are controlled with programmable logic controllers. You can choose to complete our specialized diploma in Machine Repair or our certificate in Instrumentation Process Control to enter the field more quickly. However, if you would like to add to your competitiveness or are considering furthering your education, Northampton's associate's degree in Electromechanical Technology is an excellent option.

Features:

Northampton's Electromechanical Technology Automated Systems program curriculum was developed with the assistance of many of the area's leading manufacturers and engineering firms. The program was designed to meet the demands of local and national manufacturers for entry-level employees who have broad-based hands-on skills. As a student in the program, you'll gain a strong understanding of basic electrical, mechanical and computer skills before actual hands-on exposure to programmable equipment and instrumentation. Industry experienced instructors introduce you to specific areas of expertise such as motor controls, fluid power, mechanisms, programmable logic controllers and industrial networks. A capstone practicum course in electromechanical systems offers the chance to apply all of the specific areas of knowledge you've gained to solve problems within complex automation systems. The practicum course provides an internship experience with an employer, giving you first-hand experience in maintenance and plant engineering functions. As part of the associate's degree program, you will complete general education coursework that prepares you to better communicate and work with all departments within an organization. This can be vital if you wish to grow into a supervisory position. Graduates of this program can transfer their coursework towards one of two online Bachelor of Science degrees: Applied Management through Franklin University or Industrial Management through California University of Pennsylvania. Check with your advisor for more information and options in course selection. Coursework can also be applied towards a Bachelor of Applied Science in Technical Leadership through Bloomsburg University with all Bloomsburg courses taught at Northampton Community College

Program Learning Outcomes:

- Demonstrate an ability to work independently & collaboratively.
- Demonstrate competent speaking skills when working with diverse groups.
- Describe the operation and application of commonly used automated technology and instrumentation used in modern manufacturing and processing.
- Demonstrate observational, integrative and synthetic skills.
- Demonstrate proficient research and computer skills in data gathering and analysis.
- Demonstrate a basic framework of technical vocabulary and graphics interpretation applicable to the area of equipment maintenance and design.
- Describe the principles and function of the mechanical, electrical and fluid power components and assemblies used in automated equipment.
- Operate, program, troubleshoot, repair and modify programmable automation equipment and associated components commonly found in industry.
- Demonstrate the proper use of common tools and measuring gages used in automated systems.
- Apply mathematics to solving equipment related problems.
- Analyze and present data in an acceptable and standardized manner.
- Demonstrate the use of OSHA safety standards in servicing electromechanical equipment.
- Demonstrate competent technical writing skills.

Transfer Information:

- Graduates of this program can transfer their coursework towards one of three online Bachelor's degrees:
 - Bachelor of Science in Applied Management through Franklin University.
 - Bachelor of Science in Industrial Management through California University of Pennsylvania.
 - Bachelor of Applied Science in Technical Leadership through Bloomsburg University. (All Bloomsburg courses are taught at Northampton Community College.)
- Check with your advisor for more information and options in course selection.

Career Information:

- Potential employers for those following this electromechanical technology pathway include:
 - Manufacturers
 - Construction Companies
 - Automated Equipment Integrators
- This program can be completed in the day or evening, on a full or part-time basis.

Career Potential: Electromechanical Technician, Industrial Maintenance Technician, Instrumentation Technician, Maintenance Supervisor.