Electromechanical Technology: Automated Systems - Associate in Applied Science (2022-2023 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)*			☐	MATH020	Pre-Algebra
☐	ACLS050	Introduction to Academic Literacy	☐	MATH022	Elementary Algebra
☐	ENGL027	Writing Skills Workshop	☐	MATH026	Intermediate Algebra

	complete	Course #	Course Title	Credits	Gen Ed	Pre-requisites / Co-requisites
Semester 1	☐	COLS101	College Success	1		
	☐	ELTC101	Electrical Fundamentals	3		
	☐	EMEC125	Process Automation Diagrams – P&ID	2		
	☐	EMEC130	Introduction to Process Control	3		
	☐	CADM117	Technical Drawings and Specification	3		
	☐	ENGL101	English I	3	Comm.	PRE: ENGL Placement Policy
	☐	MATH140	College Algebra	3	QL	PRE: MATH026 or MATH Placement
			Total Semester Credits:	18		
Semester 2	☐	EMEC105	Introduction to Fluid Power	3		PRE: MATH022 or MATH Placement
	☐	EMEC110	Mechanical Components	3		PRE or CO: ENGG117
	☐	ELTC135	Electrical Motors and Controls	4		PRE: ELTC101
	☐	EMEC140	Sensors, Wiring and Troubleshooting	1		PRE: ELTC101
	☐	ENGL151T	English II (Technical Writing)	3	Comm.	PRE: ENGL101
	☐		AH, SIT, or SSHB General Ed.Elective	3	AH, SIT, SSHB	
			Total Semester Credits:	17		
Semester 3	☐	CMTH102	Introduction to Communication	3	Comm.	
	☐	EMEC220	Instrumentation I	3		PRE: EMEC125 and EMEC130
	☐	EMEC240	Industrial Control Systems I	4		PRE: ELTC101; PRE or CO: EMEC140
	☐	EMEC205	Electrical Controls of Fluid Power	3		PRE or CO: EMEC105, EMEC110, & ELTC135
	☐	PHYS101	Physics I	4		PRE: MATH140 with C or better
			Total Semester Credits:	17		
Semester 4	☐	EMEC225	Instrumentation II	3		PRE or CO: EMEC220
	☐	EMEC245	Industrial Control Systems II	3		PRE: EMEC240
	☐	EMEC251	Mechanical Systems	3		PRE: ENGL101; PRE or CO: Completion of all other technical courses in program
	☐	OSAH101 or OSAH102	Construction Industry Outreach Safety Education* or General Industry Safety Education**	1		
	☐		AH, SIT, or SSHB General Ed.Elective	3	AH, SIT, SSHB	
	☐		Elective	3		
			Total Semester Credits:	16		
			Total Degree Credits	68		

General Education Requirements		
☐		Diversity
☐		Writing Intensive

**OSAH102 (General Industry) is the recommended selection
Notes: +For the General Education Electives, students must select one course from the list of approved courses in two of the following categories: Arts & Humanities (AH); Social Science: Societies and Institution over Time (SIT); Social Science: Scientific Study of Human Behavior (SSHB).

*One course should be designated as Diversity and Global Awareness (D) for degree completion.
*Completion of one General Education Elective in a Writing Intensive (WI) section satisfies the Writing Intensive (WI) requirement. GEOG121G (Environmental Sustainability) is recommended.
*Computer competencies are included in various courses in this program. Thus, completing the program automatically satisfies the computing requirement for this program.

Arts & Humanities (AH)
ARTA 100 Art and Visual Thinking
ARTA 101 Art History Survey
THEA 110 Introduction to the Theatre
THEA 111 Acting I
THEA 115 Technical Theatre
THEA 117 Stagecraft
CMTH 126 The Communication Arts
THEA 189 Stage Voice and Movement
THEA 190 Stage Production
THEA 206 Directing
THEA 211 Plays: Classical to Contemp. (G-WI)
THEA 212 Acting II
THEA 218 Theatre Portfolio
CMTH 220 Introduction to Film
CMTH235 Understanding Culture Through Fiilm
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 169G History of Latinos in the US
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)
CJST 101 Intro to Criminal Justice
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	HIST 165 The American Experience of Warfare
BIOS 210 Environmental Biology	HIST 166 Civil War & Reconstruction
BUSA 115 Intro to International Business	HIST 168 History of the Middle East
CJST 101 Intro to Criminal Justice	HIST 169G History of Latinos in the US
CMTH 126 The Communication Arts	HIST 173 Mod Euro History: 1815-Present
THEA 211 Plays: Classical to Contemporary	HIST 183 Modern American History 1945-Present
CMTH 215 Intercultural Communication	HUMA 121 American Work Experience
CMTH235 Understanding Culture Through Film	HUMA 140 Intro to Women and Gender Studies
DANC 101 Dance History	HUMA 150 Nature of the Environment
ENGL 151L English II (Literature)	HUMA210 Creativity and The Origin of Ideas
ENGL 205 American Literature I	INTS 201 Implement Sustain Energy Sys in Dev Com
ENGL 211 Plays: Classical to Contemporary	MATH 150 Introductory Statistics
ENGL 215 Multicultural Adolescent Literature	Modern Language - All MDLA Courses
ENGL 250 Latin American Literature	PHIL111 On Death and Dying
ENGL 251 British Literature II	PHIL 121 World Religions
ENGL 253 Creative Writing	PHIL 204 Asian Philosophies
ENGL 255 American Literature II	POLS 101 Introduction to Political Science
ENGL 256 Modern Poetry	POLS 105G American Constitutional Law
ENGL 257 20th Century Lit by Women	POLS 150 Peace Studies & Conflict Resolution (Study Abroad)
ENGL 260 Contemporary Literature	POLS 270 Politics of Modern Turkey (Study Abroad)
ENGL 264 Irish Literature	POLS 202 International Relations
ENGL 265 African-American Literature	POLS205 Women & Politics
ENGL 267 Poetry Writing	POLS 251 State & Local Government
GEOG 101 World Geography	PSYC 230 Introduction to Health Psychology
GEOG 121 Environmental Sustainability	PSYC 258 Developmental Psychology
GEOG 151 Geography of the U.S. and Canada	SOCA 102 Cultural Anthropology
GEOG 210 Weather and Climate	SOCA103 Principles of Sociology
GLBL 130 Intro to Global Studies	SOCA 105 American Ethnicity
GLBL 160 Field Experience & Acad Research in GS	SOCA 125 Sociology of Families
GLBL 230 Global Studies Capstone	SOCA 150 Deviance
HIST 113 American History I	SOCA160 Issues in Cont Genocide & Mass Violence
HIST 121 The Black Experience	SOCA204 Social Problems
HIST 140 Modern Chinese History	

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.