

Engineering Science

ENGINEERING TECHNOLOGIES DEPARTMENT

Associate in Science (A.S.) Degree

□ Why major in Engineering Science?

Engineers are professionals with competency in mathematics and the physical and technical sciences. For students who enjoy solving problems and working with technical or scientific equipment, and do well in mathematics and science, engineering science is a good choice of major. The college has a transfer agreement with Rutgers College of Engineering and the New Jersey Institute of Technology. Articulation agreements with many other engineering colleges facilitate transfer with full credit.

□ What will students learn by studying Engineering Science?

They study theoretical and applied science, mathematics, and engineering subjects. They learn to apply mathematics and science to technical operations. Students have the opportunity to study in small groups in an environment with close faculty contact.

□ Are there any requirements that must be satisfied before taking courses in the major?

Algebra I is a prerequisite for all majors. Algebra I competency may be verified with a passing score on the College's placement test or completion of the appropriate course. Students also need a grade of "C" or better in high school algebra II, geometry, advanced algebra, trigonometry, laboratory chemistry and laboratory physics.

□ Can Engineering Science students transfer to a four-year college or university?

The Statewide Transfer Agreement for New Jersey ensures that students who earn an A.A. or A.S. degree at a community college will have those credits fully transferable to a New Jersey public four-year institution, will have completed half of the credits required for a basic four-year degree and will have completed all of the lower division general education requirements. In addition, articulation agreements with private institutions may provide similar transfer provisions. Students should discuss the transfer process with an advisor.

□ How long will it take to complete this degree?

Once students complete developmental coursework (if needed), the degree can be completed in two years of full-time study. They can shorten the amount of time by taking courses in the summer and winter sessions.

□ Questions?

Contact Name: Professor Thomas Sabol, department chair

Contact Phone: 732.906.2586

Contact Email: Tsabol@middlesexcc.edu

Department Web: <http://www.middlesexcc.edu/departments/engineeringtech>

ENGINEERING SCIENCE

Associate in Science (A.S.) Degree - ES.AS

*Below are required courses and recommended course groupings and sequences for program completion.
Courses may have prerequisite and corequisite requirements. Check course descriptions for details.*

Courses	Credits	Requisites / Comments
<i>Semester I</i>		
CHM 121 General Chemistry I – Lecture	3	Two years of high school algebra and geometry or MAT 013, MAT 014 and one year of high school chemistry or CHM010.
CHM 125 General Chemistry I – Lab	1	Two years of high school algebra and geometry or MAT 013, MAT 014 and one year of high school chemistry or CHM010.
CSC 133 Introduction to Computer Science Using C++	4	MAT 014 or appropriate score on the College's placement test. Corequisite(s): MAT 125 or MAT 129A. MAT 129 can be substituted for MAT 129A & MAT 129B. CSC 133 is not a required course. Students who choose to transfer should consult with their academic advisor to select an appropriate computer science course that will satisfy the transfer institutes requirement.
ENG 121 English Composition I	3	A passing score on the College's placement test or a grade of "C" or better in ENG 010.
MAT 131 Analytic Geometry and Calculus I	4	MAT 129, or MAT 129A/MAT 129B, or appropriate score on the College's placement test and/or satisfactory score on the diagnostic examination, or departmental approval.
MEC 119 Graphic Science	2	
____ General Education Social Science Elective (GE SS)	3	
<hr/>		
<i>Semester II</i>		
CHM 122 General Chemistry II – Lecture	3	CHM 121
CHM 126 General Chemistry II – Lab	1	CHM 121, CHM 125
ENG 122 English Composition II	3	A grade of "C" or better in ENG 121
MAT 132 Analytic Geometry and Calculus II	4	MAT 131, MAT 131B, or equivalent
PHY 133 Analytical Physics I – Lecture	3	Prerequisite(s): One year of high school laboratory physics. Corequisite(s): MAT 131 or equivalent
PHY 135 Analytical Physics I-Lab	1	Prerequisite(s): One year of high school laboratory physics. Corequisite(s): MAT 131 or equivalent
PED ____ Physical Education Elective	1	Students may take a health elective in place of physical education. However, if the total credits exceed 66 upon graduation they may not all transfer.
<hr/>		
<i>Semester III</i>		
____ Technical Elective	3-4	See Technical Electives in list below.
MAT 233 Analytic Geometry and Calculus III	4	MAT 132 or equivalent
MEC 221 Engineering Mechanics I	3	MAT 131 or MAT 131B
PHY 134 Analytical Physics II – Lecture	3	Prerequisite(s):PHY 133 Corequisite(s): MAT 132 or equivalent
PHY 136 Analytical Physics II-Lab	1	Prerequisite(s): PHY 135 Corequisite(s): MAT 132 or equivalent
____ General Education Humanities Elective (GE HUM)	3	
<hr/>		
<i>Semester IV</i>		
____ Technical Elective	4	See Technical Electives in list below.
MAT 234 Differential Equations	4	MAT 233 or approval of department chairperson of mathematics.
PHY 236 Analytical Physics III-Lecture	3	PHY 134, MAT 132
PHY 239 Analytical Physics III-Lab	1	PHY 136 or one year of integral and differential calculus, MAT 132
____ General Education Social Science Elective (GE SS)	3	
OR General Education Humanities Elective (GE HUM)	3	

Total Credits: 64-65

TECHNICAL ELECTIVES

<u>Courses</u>	<u>Credits</u>	<u>Requisites/Comments</u>
CHEMICAL ENGINEERING		
CHM 221 Organic Chemistry I -Lecture AND CHM 227 Organic Chemistry I –Lab	3 1	CHM 122 or equivalent CHM 126 or equivalent
CHM 222 Organic Chemistry I -Lecture AND CHM 228 Organic Chemistry I –Lab	3 1	CHM 221 or equivalent CHM 227 or equivalent
CIVIL ENGINEERING		
ELT 221 Electric Circuits I *	4	MAT 132 or equivalent
MEC 222 Engineering Mechanics II **	3	MEC 221
CIT 253 Mechanics of Materials ***	3	MEC 221
ELECTRICAL ENGINEERING		
ELT 221 Electric Circuits I *	4	MAT 132 or equivalent
ELT 222 Electric Circuits II **	4	ELT 221
MECHANICAL ENGINEERING		
ELT 221 Electric Circuits I *	4	MAT 132 or equivalent
MEC 222 Engineering Mechanics II **	4	MEC 221
CIT 253 Mechanics of Materials ***	3	MEC 221

Total Credits: 64-65

* Only offered in the Fall semester

** Only offered in the Spring semester

*** Only offered in the Summer semester. This is not a required course for graduation; however it may be required at the student's transfer institution.

Contact Name: Professor Thomas Sabol, department chair

Contact Phone: 732.906.2586

Contact Email: Tsabol@middlesexcc.edu

Department Web: <http://www.middlesexcc.edu/departments/engineeringtech>