MATH AND PRE-ENGINEERING, ASSOCIATE IN SCIENCE

Program Description

The **Associate in Science (A.S.) in Mathematics and Pre-Engineering** is designed for students who plan to transfer to a four-year institution to pursue a bachelor's degree in mathematics, engineering, or a related STEM field.

This program provides a strong foundation in calculus, physics, and analytical problem-solving while developing the quantitative reasoning skills essential for advanced study in science, engineering, and technology disciplines. Students learn to apply mathematical and scientific principles to real-world problems while strengthening their ability to analyze complex systems and develop technical solutions.

Students are encouraged to choose a concentration to guide their studies and align their coursework with their intended transfer major. Concentrations help students follow the appropriate sequence of mathematics, science, and technical courses needed for upper-level study in their chosen field.

Transfer Information

The A.S. in Mathematics and Pre-Engineering is structured to align with bachelor's degree programs in mathematics, engineering, and related STEM disciplines.

Students are encouraged to work closely with faculty and Advising & Transfer Services to ensure coursework aligns with the requirements of their intended transfer institution. Because mathematics and engineering programs require carefully sequenced coursework in calculus, physics, and related sciences, students should follow the recommended course sequence to remain on track for transfer.

Students planning to transfer within New Jersey can explore the "Transfer Programs" feature on NJ Transfer (www.njtransfer.org (http://www.njtransfer.org)) to review articulation agreements and institutional requirements.

Career Information

The A.S. in Mathematics and Pre-Engineering is designed primarily for transfer. A bachelor's degree is typically required for professional roles in mathematics, engineering, and related technical fields.

With further education, graduates may pursue careers such as:

- Engineer (civil, electrical, mechanical, and other disciplines)
- Data Analyst or Data Scientist
- Applied Mathematician
- Statistician
- Operations Research Analyst

Students are encouraged to consult with faculty and Career Services early in their academic journey to explore transfer pathways, internships, and career opportunities in mathematics, engineering, and technology fields.

First Semester		Credit Hours
ENGL 151	English I	3
ENGR 181	Graphics for Engineers (Foundational Course)	2
CSIT 124 or CSIT 163 or CSIT 165	Introduction to Programming or Introduction to Programming Using C++ or Programming I	3
CHEM 181	General Chemistry I	4
ENGR 103 Engineering First Year Experience and Fundamentals [1]		3
	Credit Hours	**15**
Second Semester		
ENGL 152	English II	3
MATH 265	Calculus I (Students should take this course in the first semester if eligible. Please see advisor to upated schedule.)	4
PHYS 281	General Physics I	4
Humanities Gen. Ed. Requirement (https://catalog.ocean.edu/graduation-requirements-degree/approved-general-education-courses/#humanities)		3
	Credit Hours	**14**
Third Semester		
MATH 266	Calculus II	4
PHYS 282	General Physics II	4
Any ENGR Engineering course(s) (https://catalog.ocean.edu/course-descriptions/engr/) [2]		6
Humanities or Social Science Gen. Ed. Requirement (https://catalog.ocean.edu/graduation-requirements-degree/approved-general-education-courses/#humanities)		3
	Credit Hours	**17**
Fourth Semester		
MATH 267	Calculus III	4
Any ENGR Engineering course(s) [2]		3
Engineering Technology/STEM Electives (p.) [2]		4
Social Science Gen. Ed. Requirement (https://catalog.ocean.edu/graduation-requirements-degree/approved-general-education-courses/#humanities)		3
	Credit Hours	**14**
	Total Credit Hours	**60**

Engineering Technology/STEM Electives

Code	Title	Credit Hours
Any ENGT Engineering Technology course(s) (https://catalog.ocean.edu/course-descriptions/engt/)		
CHEM 182	General Chemistry II	4
CSIT 176	Computer Organization & Architecture	3
MATH 275	Linear Algebra	3
MATH 281	Differential Equations	4
PHYS 283	General Physics III	4

1 Students transferring into the program from other majors may use any STSC course for this requirement, if it has already been complete upon transfer into the AS.ENGR degree program. If this option is chosen, they must fulfill the 60 cr requirement for the AS.ENGR degree through ENGR or ENGT course credits.

2 Students should select electives relevant to their planned Engineering Bachelor's Degree concentration.

The Associate in Science Engineering degree program is designed to prepare engineering students to successfully transfer to baccalaureate

engineering programs in the following areas: Biomechanical, Civil/ Construction, Electrical, Industrial, Mechanical or General Engineering. Participants in the associate program will enroll in science, mathematics, engineering, and engineering technology courses that provide serious students with the knowledge and background necessary to take upper level courses in their chosen field of study as well as prepare them to participate in experiential learning opportunities in industry.