MECHANICAL ENGINEERING CONCENTRATION

Program Description

The **Mechanical Engineering Concentration** within the Associate in Science 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 mechanical engineering or a related engineering discipline.

This concentration provides a strong foundation in calculus, physics, and engineering principles related to the design and operation of mechanical systems. Students develop analytical and problem-solving skills while exploring how engineers design machines, mechanical devices, energy systems, and manufacturing processes. Coursework emphasizes quantitative reasoning, scientific analysis, and the application of mathematics and physics to engineering challenges.

The program prepares students for upper-level coursework in mechanical engineering and related fields focused on mechanical design, energy systems, and advanced manufacturing technologies.

Transfer Information

The Mechanical Engineering concentration is structured to align with bachelor's degree programs in mechanical engineering and related disciplines such as aerospace engineering, manufacturing engineering, and robotics.

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 engineering programs require carefully sequenced coursework in calculus, physics, and technical subjects, students should follow the recommended course sequence to remain on track for transfer.

Students planning to transfer within New Jersey should 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 – Mechanical Engineering Concentration is designed primarily for transfer. A bachelor's degree in mechanical engineering is typically required for professional roles in the field.

With further education, graduates may pursue careers such as:

- Mechanical Engineer
- Manufacturing Engineer
- Robotics Engineer
- Automotive Engineer
- Aerospace Engineer

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

Fall One		Credit Hours
ENGL 151	English I	3
STSC 150	Student Success Seminar	2
MATH 166	Topics in Algebra	4
CSIT 124	Introduction to Programming	3
CHEM 181 & 181L	General Chemistry I Lecture and General Chemistry I Lab	4
	Credit Hours	**16**
Spring One		
ENGL 152	English II	3
ENGR 181	Graphics for Engineers	2
MATH 196	Precalculus	4
CHEM 182 & 182L	General Chemistry II Lecture and General Chemistry II Lab	4
HIST 181	World Civilization to 1660	3
	Credit Hours	**16**
Summer One		
MATH 265	Calculus I	4
	Credit Hours	**4**
Fall Two		
ENGR 221	Engineering Statics	3
MATH 266	Calculus II	4
PSYC 172	General Psychology	3
PHYS 281 & 281L	General Physics I Lecture and General Physics I Lab	4
	Credit Hours	**14**
Spring Two		
ENGR 222	Engineering Dynamics	3
PHYS 282 & 282L	General Physics II Lecture and General Physics II Lab	4
ECON 151	Macroeconomic Principles	3
MATH 281	Differential Equations	4
	Credit Hours	**14**
	Total Credit Hours	**64**

* ENGR 225, Strength & Mechanics of Materials, will be offered in the summer term.

** MATH 267, Calculus III, will be offered in the summer term.

Fall One		Credit Hours
ENGL 151	English I	3
STSC 150	Student Success Seminar	2
CSIT 124	Introduction to Programming	3
CHEM 181 & 181L	General Chemistry I Lecture and General Chemistry I Lab	4
MATH 196	Precalculus	4
	Credit Hours	**16**
Spring One		
ENGL 152	English II	3
ENGR 181	Graphics for Engineers	2
CHEM 182 & 182L	General Chemistry II Lecture and General Chemistry II Lab	4
MATH 265	Calculus I	4
HIST 181	World Civilization to 1660	3
	Credit Hours	**16**
Fall Two		
ENGR 221	Engineering Statics	3
MATH 266	Calculus II	4
PHYS 281 & 281L	General Physics I Lecture and General Physics I Lab	4

PSYC 172	General Psychology	3
	Credit Hours	**14**
Spring Two		
ENGR 222	Engineering Dynamics	3
MATH 281	Differential Equations	4
PHYS 282 & 282L	General Physics II Lecture and General Physics II Lab	4
ECON 151	Macroeconomic Principles	3
	Credit Hours	**14**
	Total Credit Hours	**60**

* ENGR 225, Strength & Mechanics of Materials, will be offered in the summer term.

** MATH 267, Calculus III, will be offered in the summer term.

Fall One		**Credit Hours**
ENGL 151	English I	3
STSC 150	Student Success Seminar	2
MATH 265	Calculus I	4
CHEM 181 & 181L	General Chemistry I Lecture and General Chemistry I Lab	4
CSIT 124	Introduction to Programming	3
	Credit Hours	**16**
Spring One		
ENGL 152	English II	3
ENGR 181	Graphics for Engineers	2
MATH 266	Calculus II	4
CHEM 182 & 182L	General Chemistry II Lecture and General Chemistry II Lab	4
PHYS 281 & 281L	General Physics I Lecture and General Physics I Lab	4
	Credit Hours	**17**
Fall Two		
ENGR 221	Engineering Statics	3
MATH 267	Calculus III	4
PHYS 282 & 282L	General Physics II Lecture and General Physics II Lab	4
HIST 181	World Civilization to 1660	3
	Credit Hours	**14**
Spring Two		
ENGR 222	Engineering Dynamics	3
MATH 281	Differential Equations	4
ECON 151	Macroeconomic Principles	3
PSYC 172	General Psychology	3
	Credit Hours	**13**
	Total Credit Hours	**60**

* ENGR 225, Strength & Mechanics of Materials, will be offered in the summer term.

** MATH 267, Calculus III, will be offered in the summer term.