

# CIVIL ENGINEERING CONCENTRATION

## Program Description

The **Civil 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 civil engineering or a related engineering discipline.

This concentration provides a strong foundation in calculus, physics, and engineering principles used in the design, construction, and maintenance of infrastructure systems. Students develop analytical and problem-solving skills while exploring how engineers design structures, transportation systems, water systems, and other essential components of the built environment. 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 civil engineering and related infrastructure and environmental engineering fields.

## Transfer Information

The Civil Engineering concentration is structured to align with bachelor's degree programs in civil engineering and related disciplines such as structural engineering, transportation engineering, and environmental engineering.

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) (<http://www.njtransfer.org>)) to review articulation agreements and institutional requirements.

## Career Information

The A.S. in Mathematics and Pre-Engineering – Civil Engineering Concentration is designed primarily for transfer. A bachelor's degree in civil engineering is typically required for professional roles in the field.

With further education, graduates may pursue careers such as:

- Civil Engineer
- Structural Engineer
- Transportation Engineer
- Environmental Engineer
- Construction Project 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 civil engineering and infrastructure development.

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
<b>Credit Hours</b>		<b>16</b>
Spring One		
ENGL 152	English II	3
ENGR 181	Graphics for Engineers	2
MATH 196	Precalculus	4
HIST 181	World Civilization to 1660	3
ECON 151	Macroeconomic Principles	3
<b>Credit Hours</b>		<b>15</b>
Summer One		
MATH 265	Calculus I	4
<b>Credit Hours</b>		<b>4</b>
Fall Two		
ENGR 123	Surveying I	3
MATH 266	Calculus II	4
PSYC 172	General Psychology	3
PHYS 281 & 281L	General Physics I Lecture and General Physics I Lab	4
<b>Credit Hours</b>		<b>14</b>
Spring Two		
ENGR 221	Engineering Statics	3
MATH 267	Calculus III	4
MATH 281	Differential Equations	4
PHYS 282 & 282L	General Physics II Lecture and General Physics II Lab	4
<b>Credit Hours</b>		<b>15</b>
<b>Total Credit Hours</b>		<b>64</b>

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

Fall One		Credit Hours
ENGL 151	English I	3
STSC 150	Student Success Seminar	2
MATH 196	Precalculus	4
CSIT 124	Introduction to Programming	3
CHEM 181 & 181L	General Chemistry I Lecture and General Chemistry I Lab	4
<b>Credit Hours</b>		<b>16</b>
Spring One		
ENGL 152	English II	3
ENGR 181	Graphics for Engineers	2
MATH 265	Calculus I	4
HIST 181	World Civilization to 1660	3
ECON 151	Macroeconomic Principles	3
<b>Credit Hours</b>		<b>15</b>
Fall Two		
ENGR 123	Surveying I	3
MATH 266	Calculus II	4
PHYS 281 & 281L	General Physics I Lecture and General Physics I Lab	4
PSYC 172	General Psychology	3
<b>Credit Hours</b>		<b>14</b>

**Spring Two**

ENGR 221	Engineering Statics	3
MATH 267	Calculus III	4
MATH 281	Differential Equations	4
PHYS 282 & 282L	General Physics II Lecture and General Physics II Lab	4
<b>Credit Hours</b>		<b>15</b>
<b>Total Credit Hours</b>		<b>60</b>

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

<b>Fall One</b>		<b>Credit Hours</b>
ENGL 151	English I	3
STSC 150	Student Success Seminar	2
MATH 265	Calculus I	4
CSIT 124	Introduction to Programming	3
CHEM 181 & 181L	General Chemistry I Lecture and General Chemistry I Lab	4
<b>Credit Hours</b>		<b>16</b>

<b>Spring One</b>		<b>Credit Hours</b>
ENGL 152	English II	3
ENGR 181	Graphics for Engineers	2
MATH 266	Calculus II	4
HIST 181	World Civilization to 1660	3
PHYS 281 & 281L	General Physics I Lecture and General Physics I Lab	4
<b>Credit Hours</b>		<b>16</b>

<b>Fall Two</b>		<b>Credit Hours</b>
ENGR 221	Engineering Statics	3
ENGR 123	Surveying I	3
MATH 267	Calculus III	4
PHYS 282 & 282L	General Physics II Lecture and General Physics II Lab	4
<b>Credit Hours</b>		<b>14</b>

<b>Spring Two</b>		<b>Credit Hours</b>
ENGR 222	Engineering Dynamics	3
MATH 281	Differential Equations	4
PSYC 172	General Psychology	3
ECON 151	Macroeconomic Principles	3
<b>Credit Hours</b>		<b>13</b>
<b>Total Credit Hours</b>		<b>59</b>

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