

# Major in Geotechnical Engineering (20 units)

**For the Major in Geotechnical Engineering, Civil Engineering students must complete 20 units comprising:**

- I. 4 units of Compulsory Geotechnical Engineering Courses in the Civil Engineering Program; and
- II. 8 units of Compulsory Geotechnical Engineering Courses in the Geotechnical Engineering Major; and
- III. 2 to 8 units from Advanced Geotechnical Engineering Electives; and
- IV. 0 to 8 units from Geotechnical Engineering Breadth Electives; and
- V. 0 to 8 units from Civil Engineering Advanced Electives (Electives from other Civil Engineering Disciplines)

# Geotechnical Engineering Compulsory Courses

## Compulsory Geotechnical Engineering Courses for Civil Engineering students:

- CIVL2210 Soil Mechanics
- CIVL3210 Geotechnical Engineering

## Compulsory Geotechnical Engineering Courses for Geotechnical Engineering Major students:

- CIVL3220 Rock Mechanics
- CIVL4230 Advanced Soil Mechanics
- CIVL 4270 Geotechnical Investigations
- CIVL4280 Advanced Rock Mechanics

# Advanced Geotechnical Engineering Elective Courses

- CIVL4290 Geotechnical Infrastructure
- CIVL6215 Ground Improvement
- CIVL6250 Underground Structures
- CIVL6210 Dam Engineering
- CIVL6220 Tailings Design

# Other Geotechnical Engineering Breadth Electives *(in order from most related)*

- EARTH1501 Earth Processes and Geological Materials for Engineers
- EARTH2004 Structural Geology
- EARTH3250 Hydrogeology
- MINE3129 Applied Mining Geomechanics
- CIVL4145 Groundwater Modelling and Management
- CIVL4660 Road Design
- GEOM1000 Fundamentals of Geographic Information and Technologies
- GEOM2001 Geographical Information Systems

# Recommended Electives for Geotechnical Engineering Focus Areas

Tunnelling	Infrastructure	Resources Geomechanics
CIVL4290 Geotechnical Infrastruct. CIVL6215 Ground Improvement CIVL6250 Underground Structures EARTH3250 Hydrogeology	CIVL4290 Geotechnical Infrastruct. CIVL6215 Ground Improvement CIVL6250 Underground Structures CIVL4460 Road Design	CIVL6210 Dam Engineering CIVL6220 Tailings Design MINE3129 Applied Mining Geomech. EARTH2004 Structural Geology
Foundation Engineering	Geoenvironmental Engineering	Dam Engineering
CIVL4290 Geotechnical Infrastruct. CIVL6215 Ground Improvement CIVL6250 Underground Structures CIVL4145 Groundw. Mod. & Man.	CIVL4290 Geotechnical Infrastruct. CIVL6215 Ground Improvement CIVL4145 Groundw. Mod. & Man. GEOM1000 Fund. Geog. Inf. & Tech.	CIVL6210 Dam Engineering CIVL6220 Tailings Design CIVL6215 Ground Improvement CIVL4145 Groundw. Mod. & Man.

Course offered by: **Civil Engineering**  
**Mechanical Engineering**  
**Earth & Environmental Sciences**

# Major in Geotechnical Engineering at a Glance

## Compulsory Geotechnical Engineering Courses for Civil Engineering students

## Compulsory Geotechnical Engineering Courses for Geotechnical Engineering Major students

## Recommended Electives for Geotechnical Engineering Focus Areas

CIVL4290 <sup>1,2,4,6</sup>	Geotechnical Infrastructure
CIVL6210 <sup>3,5</sup>	Dam Engineering
CIVL6215 <sup>1,2,4,5,6</sup>	Ground Improvement
CIVL6220 <sup>3,5</sup>	Tailings Design
CIVL6250 <sup>1,2,4</sup>	Underground Structures
CIVL4145 <sup>4,5,6</sup>	Groundwater Modelling & Management
CIVL4460 <sup>2</sup>	Road Design
MINE3129 <sup>3</sup>	Applied Mining Geomechanics
ERTH2004 <sup>3</sup>	Structural Geology
ERTH3250 <sup>1</sup>	Hydrogeology
GEOM1000 <sup>6</sup>	Fundamentals of Geographic Information & Technologies

Year	Semester	Course	Category	Notes
Year 1	1	MATH1051 Calculus & Linear Algebra	General engineering	
	2	MATH1052 Multivariate Calculus & Ordinary Differential Equations	General engineering	
Year 2	3	CIVL2135 Environmental engineering	Major	
	4	CIVL3360 Reinforced concrete design	Civil specialisation	
Year 3	5	CIVL3530 (NEW) Data analytics in civil engineering	Major	
	6	CIVL3520 (NEW) Project mgt & professional practice	Civil specialisation	★
Year 4	7	CIVL4170 Risk analysis and assessment	Civil specialisation	★
	8	CIVL4514/16 Capstone design (built or natural env)	Major	

  

General engineering	Civil specialisation	Major	Elective
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ERTH1501 Earth Processes (suggested)	General elective <sup>1</sup>
Program elective <sup>2</sup>	
CIVL2530 Statistics and data analysis	CIVL2420 (NEW) Fundamentals of transport engineering
CIVL2210 Soil Mechanics	
CIVL3210 Geotechnical Engineering	
CIVL3220 Rock Mechanics	CIVL4270 Geotechnical Investigation
CIVL4280 Applied Rock Mechanics	CIVL4230 Advanced Soil Mechanics
Engineering Focus Areas	
1. Tunnelling	4. Foundation Engineering
2. Infrastructure	5. Dam Engineering
3. Resources Geomechanics	6. Geoenvironmental Engineering

Course offered by: **Civil Engineering**  
**Mechanical Engineering**  
**Earth & Environmental Sciences**

★ Available for further Geotechnical Engineering Courses

★ Preferred year and semester for this suggested course (if possible)