

Course Outline

School / Portfolio: Faculty of Science and Technology

Course Title: GEOMECHANICS

Course ID: MGGGC6102

Credit Points: 15

Prerequisite(s): Nil

Co-requisite(s): Nil

Exclusion(s): Nil

ASCED Code: 030911

Program Level:

	AQF Level of Program					
	5	6	7	8	9	10
Level						
Introductory						
Intermediate					✓	
Advanced						

Learning Outcomes:

On completion of the course students will be able to:

Knowledge:

- K1.** Describe the engineering properties and behaviour of soil and rocks.
- K2.** Recall the principles of unsaturated soil mechanics and contrast saturated and unsaturated soil behaviours.

Skills:

- S1.** Analyse stress and strain in geomaterials and interpret the outcome.
- S2.** Solve numerical problems to calculate ground settlement.
- S3.** Design shallow footings and earth retaining structures.

Application of knowledge and skills:

- A1.** Assess the displacements and evaluate stability of structures.
- A2.** Calculate hydraulic pressures and forces and discuss the stability of earth structures.
- A3.** Interpret experimental results and use them in engineering designs.

Course Content:

Topics may include:

- Phase relationships.
- Concept of effective stress.
- Constitutive modelling.

Course Outline

MGGGC6102 GEOMECHANICS

- Stress and displacement in soil.
- Stress and displacement in rocks.
- Unsaturated soil behaviour.
- Seepage.
- Consolidation.
- Shear strength of soil.
- Shear strength of rocks.
- Earth pressure.
- Foundations.
- Design for dynamic loading.

Values and Graduate Attributes:

Values:

- V1. Developing the capacity to make independent judgement on the behaviour of geomaterials.
- V2. Supporting active learning by application of soil and rock mechanics to solve common problems related to geomechanics.

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Task	Assessment Type	Weighting
K1, K2, S1, S2, A1	Carry out an assessment on phase relationships, effective stress and constitutive modelling.	Coursework " Essay (1500 words) + numerical problems.	25-35%
K1, K2, S3, A2	Carry out an assessment on the seepage flow under a dam and settlement in a soft soil layer under a structure.	Coursework - Numerical problems.	25-35%
K1, K2, S1, S3, A3	For a given case, undertake a design task of an earth retaining structure.	Coursework - Design project.	35-45%

Adopted Reference Style:

Australian