

School / Faculty: Faculty of Science and Technology

Course Title: ADVANCED STRUCTURAL ANALYSIS II

Course ID: ENGIN5203

Credit Points: 15.00

Prerequisite(s): ENGIN3201

Co-requisite(s): Nil

Exclusion(s): Nil

ASCED Code: 030903

Grading Scheme: Graded (HD, D, C, etc.)

Program Level:

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

Learning Outcomes:

Upon successful completion of this course, students should be able to:

Knowledge:

- K1.** Describe the method of construction of reinforced earth walls and explain the considerations which lead to their adoption on engineering projects.
- K2.** Explain the methods of construction and the structural behaviour of composite floor systems and the factors which have led to their growing popularity.
- K3.** Relate design considerations unique to structural masonry to structural engineering practice.
- K4.** Recall the most recent construction and maintenance methods and products and describe where such information can be sourced.
- K5.** Interpret and evaluate typical bridge design and construction techniques.

Skills:

- S1.** Research and report on modern construction and maintenance techniques and products.
- S2.** Prepare high quality documents presenting advanced structural analysis, design and expected outcomes.
- S3.** Exercise informed judgement in making structural design decisions.

Course Outline (Higher Education)

ENGIN5203 ADVANCED STRUCTURAL ANALYSIS II

Application of knowledge and skills:

- A1.** Undertake the structural design of composite floor systems, comprising reinforced concrete slabs and steel beams, in accordance with Australian Standard AS2327, by a manual approach and using design tabulations
- A2.** Design unreinforced masonry walls and columns and reinforced masonry walls in accordance with Australian Standard AS3700
- A3.** Recognise situations where a reinforced earth style of retaining wall may be appropriate, and undertake its structural design

Course Content:

Topics may include:

- Introduction to tilt-up construction
- Design of reinforced earth walls
- Repairs and maintenance of structures
- Design of composite floor systems
- Design of structural masonry
- Industrial floor slabs

Values and Graduate Attributes:

Values:

- V1.** Appreciate that, above all else, the minimisation of risk to human safety is the primary goal of structural design
- V2.** Recognise that whilst design handbooks represent a convenient approach to design of standard structural systems, safe and informed design decisions still depend upon an understanding of the background theory
- V3.** Appreciate that poor maintenance and repair practices represent false economy in the long-term management of a built asset

Graduate Attributes:

FedUni graduate attributes statement. To have graduates with knowledge, skills and competence that enable them to stand out as critical, creative and enquiring learners who are capable, flexible and work ready, and responsible, ethical and engaged citizens.

Attribute	Brief Description	Focus
Knowledge, skills and competence	The concepts presented in this course are advanced and require deep learning as students need to apply them in the tasks specified in the design assignments.	High
Critical, creative and enquiring learners	The design and research tasks in the course will further develop students' self-reliance capacity as critical, creative and enquiring learners.	Medium

Course Outline (Higher Education)

ENGIN5203 ADVANCED STRUCTURAL ANALYSIS II

Attribute	Brief Description	Focus
Capable, flexible and work ready	The required quality of the design reports and reporting of research findings will develop capability and promote self-confidence in students, further enhancing their sense of reliance and prepare them to join the work force.	Medium
Responsible, ethical and engaged citizens	The responsibility of Engineers to abide by design standards and exercise due diligence in order to achieve outcomes which are in the best interests of the community, with regards to safety, long term durability etc underpins all content and discussion in this course.	Low

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Task	Assessment Type	Weighting
K2, K3, K4, K5, S2, S3, A1, A2	Design exercises	Fully detailed design reports, comprising of computations and engineering drawings as required	20%-40%
K4, K5, S1	Investigation of a current construction, maintenance or repair method or product or site visit (depending upon availability of a suitable construction project at the time the unit runs)	Written report and class presentation	10%-20%
K1, K2, K3, K5, A1, A2, A3	Examination	Examination	45%-65%

Adopted Reference Style:

Other (IEEE: Refer to the library website for more information)