Associate Degree in Civil Engineering/Bachelor of Technology (Civil) (CE35)

Year offered: 2010
Admissions: No
CRICOS code: 049435B
Course duration (full-time): 3 years
Domestic fees (indicative): 2009: CSP $3,568 (indicative) per semester
Domestic Entry: This course is open to continuing students only. NO NEW OFFERS MADE AFTER 2005.
International Entry: This course is open to continuing students only. NO NEW OFFERS MADE AFTER 2005.
QTAC code: This course is no longer offered
Past rank cut-off: 50
Past OP cut-off: 24
Total credit points: 288
Course coordinator: Dr R.Mahalinga-Iyer
Discipline coordinator: Fraser McGregor
Campus: Gardens Point

Special Note
This course has been discontinued. Any remaining students should seek advice from the Course Coordinator regarding their remaining course program.

Further Information
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Course structure

Year 2 - Semester 1
ENB273 Civil Materials
SCB110 Science Concepts and Global Systems

Year 2 - Semester 2
ENB276 Structural Engineering 1

Year 3 - Semester 1
ENB271 Design of Structural Timber and Earthworks
ENB272 Geotechnical Engineering 1
BEB801 Project 1
One Elective from list below

Year 3 - Semester 2
ENB201 Fluid Mechanics
One Elective from list below
ENB274 Design of Environmentally Sustainable Systems

HECEA20 Municipal Engineering (at Southbank Institute of Technology)

Electives - Semester 1
ENB375 Structural Engineering 2
ENB378 Water Engineering
MAB233 Engineering Mathematics 3

Electives - Semester 2
ENB371 Geotechnical Engineering 2
ENB376 Transport Engineering
ENB377 Water and Waste Water Treatment Engineering

Potential Careers:
Engineering Technologist, Technical Officer.

UNIT SYNOPSISES

BEB801 PROJECT 1
This unit is usually taken in the final year of study. Students complete an individual project involving the application of skills and knowledge attained during the earlier years of their degree program. For some students, this unit will be taken one of two ‘project’ units related to the same student project; in such cases this unit may be a pre-requisite or co-requisite to the second unit (or a follow-on from the first unit). The final ‘deliverable’ for this unit may vary for each discipline and details will be provided in lectures/tutorials and on the Blackboard website.
Equivalents: CEB411, CEB420, CNB434, EEB781-1, EEB889-1  
Credit points: 12  Contact hours: 2 per week  Campus: Gardens Point  Teaching period: 2010 SEM-1 and 2010 SEM-2

ENB201 FLUID MECHANICS
Fluid properties, behaviour of stationary and moving fluids, hydrostatics and buoyancy; theory and application of the energy and momentum equations; pipe and open channel flow; dimensional analysis and pump performance characteristics.
Assumed knowledge: MAB126 or MAB180 or MAB131, and ENB101 or ENB110 are assumed knowledge.
Equivalents: CEB217  Credit points: 12  Contact hours: 4  Campus: Gardens Point  Teaching period: 2010 SEM-2
ENB271 DESIGN OF STRUCTURAL TIMBER AND EARTHWORKS
In this unit, students develop and define a problem statement and are encouraged to develop their own creative solutions through the semester. This introduces students to aspects of project work and prepares them for their professional lives. Architectural and project issues include aesthetics, fitness for purpose, and constructability. Geotechnical issues include: site investigation, earthworks and compaction, and site investigation. Structural issues include: design, loads, load paths, load factors, strength factors, time dependent loads, structural capacity and stability, rules of thumb, structural timber, material selection, and basic surveying principles.
Prerequisites: ENB102 or ENB270 (can be enrolled in the same teaching period) Assumed knowledge: ENB101 or ENB110 are assumed knowledge. Equivalents: CEB207
Credit points: 12 Contact hours: 5 per week Campus: Gardens Point Teaching period: 2010 SEM-1

ENB272 GEOTECHNICAL ENGINEERING 1
Soil mechanics is a part of geotechnical engineering, soil types, their description, classification and engineering properties. The unit includes the following: granular and cohesive soil classification systems; volume and mass components; density and air voids; determination of soil geostatic vertical pressures; pore water pressures and effective stress; permeability theory and fluid seepage in soil, with erosion and piping analysis; soil shear strength assessment and application to retaining wall lateral pressures; retaining wall design; slope stability analysis and stabilisation. Computer simulation and analysis programs are used where appropriate.
Assumed knowledge: ENB102 or ENB270 are assumed knowledge Equivalents: CEB209, CEB232 Credit points: 12 Contact hours: 6 per week Campus: Gardens Point Teaching period: 2010 SEM-1

ENB273 CIVIL MATERIALS
The unit provides students with a sound and practical approach to material properties and selection so that they may adapt to scientific and technological changes in the variety of products entering the market. They understand where the engineer fits in a quality assurance program and become aware of the numerous components of quality assurance and the costs generated by quality control and assurance. Students become aware of the effect of the working environment on different engineering materials. Among other things, they study the behaviour of concrete from the time it is manufactured to the end of its life, and develop knowledge of the parameters involved in manufacturing good concrete, and the consequences of delivering poor concrete.
Prerequisites: ENB270 or ENB102. ENB270 can be studied concurrently. Credit points: 12 Contact hours: 5 per week Campus: Gardens Point Teaching period: 2010 SEM-1

ENB274 DESIGN OF ENVIRONMENTALLY SUSTAINABLE SYSTEMS
This unit extends and applies the knowledge developed in BEB200 Introducing Sustainability to important issues such as site investigation, development of site planning criteria, site planning, environmental management and quality, pollution prevention and control, and resources and waste management. This unit builds upon generic competencies acquired in BEB100 Introducing Professional Learning and ENB271 Design of Structural Timber and Earthworks. It also provides transport planning fundamentals, which will be built upon in ENB372 Design and Planning of Highways and ENB379 Transport Engineering and Planning Applications.
Prerequisites: BEB200 or ENB200 or ENB100 or UDB100 or SCB110 Assumed knowledge: ENB271 is assumed knowledge. Equivalents: CEB214 Credit points: 12 Contact hours: 4 per week Campus: Gardens Point Teaching period: 2010 SEM-2

ENB276 STRUCTURAL ENGINEERING 1
This unit includes the following: development of the method of moment distribution and its application in analysis of continuous beams and frames; theory of influence lines and its application to determine the effects of moving loads on beams and trusses; ‘pattern loading’ on frames and continuous beams; behaviour of reinforced concrete members; applications in the design of beams and columns.
Prerequisites: ENB102 or ENB270 Assumed knowledge: ENB273 and ENB271 is assumed knowledge. Equivalents: CEB215 Credit points: 12 Contact hours: 4 per week Campus: Gardens Point Teaching period: 2010 SEM-2

ENB371 GEOTECHNICAL ENGINEERING 2
This unit includes: further study on the behaviour of soil and rocks; determination of subsurface pressures from surface loadings; soil settlement including time related clay consolidation settlement and immediate settlements on sand and clay as related to shallow foundations; assessment of bearing capacity and allowable bearing pressures under shallow foundations; pile foundation systems and analysis for capacity and settlement; rock mass behaviour, classification and joint shear strength applied to slope stability assessment and stabilisation measures.
Prerequisites: ENB272 Equivalents: CEB322 Credit points: 12 Contact hours: 5 per week Campus: Gardens Point Teaching period: 2010 SEM-2
ENB375 STRUCTURAL ENGINEERING 2
This unit considers the following: limit states design of steel structures; buckling and ultimate strength behaviour of steel structures; tension members, compression members; local and global buckling (flexural and flexural torsional buckling modes) concepts as applied to compression members and beams; effective lengths of compression members and beams; design of beams; effect of lateral restraints on buckling; web stresses including web crippling and buckling; beam-columns; bolted and welded connections; unsymmetric bending of beams including principal second moments of area; shear stresses in beams of thin-walled open cross-sections and their shear centres. Most cold-formed steel sections are unsymmetric and hence the latter topics are useful in steel design.
Prerequisites: ENB102 or ENB270 or ENB276
Assumed knowledge: ENB273 is assumed knowledge.
Equivalents: CEB318  Credit points: 12  Contact hours: 4 per week  Campus: Gardens Point  Teaching period: 2010 SEM-1

ENB376 TRANSPORT ENGINEERING
The transport system is an essential part of our physical infrastructure. It is imperative that civil engineers are able to undertake typical road and traffic engineering investigations, analyses and designs. These require an understanding of the intent of individual road system elements, how they operate, and how they are delivered and managed: this understanding is developed in this unit. Further, it is important that civil engineers are able to undertake multi-modal transport surveys to gain an understanding of the operation of a particular transport system.
Assumed knowledge: ENB274 and ENB372 are assumed knowledge.
Equivalents: CEB323  Credit points: 12  Contact hours: 4 per week  Campus: Gardens Point  Teaching period: 2010 SEM-2

ENB377 WATER AND WASTE WATER TREATMENT ENGINEERING
The provision of a safe, wholesome and adequate supply of water and the proper treatment, disposal, and reuse of wastewater are essential for protecting human health and well-being. Water and wastewater treatment are required for the control of water-born diseases and the provision of proper sanitation for urban, rural, and recreational areas. Water and wastewater treatment engineering is a major field of civil and environmental engineering and is manifested by sound principles and practice in terms of solving sanitation problems.
Prerequisites: ENB201 or ENB280  Assumed knowledge: ENB274 is assumed knowledge.
Equivalents: CEB321  Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point  Teaching period: 2010 SEM-2

ENB378 WATER ENGINEERING
The main topics to be covered in this unit follow: the hydrologic cycle and its application to the estimation of runoff from small catchments; probability and risk and the selection of design floods; hydrologic data; estimation of peak runoff using the Rational Formula estimation of runoff hydrographs using rainfall-runoff routing models; the hydraulic characteristics of open channels; uniform flow, gradually varied flow and rapidly varied flow; the hydraulic characteristics of culverts and retention basins; the operation of urban drainage systems.
Prerequisites: ENB201 or ENB280  Equivalents: CEB319  Credit points: 12  Contact hours: 4 per week  Campus: Gardens Point  Teaching period: 2010 SEM-1

MAB233 ENGINEERING MATHEMATICS 3
This unit is mostly introductory statistics for engineering but also includes a small component on foundations of computational mathematics. Statistics includes: the planning, execution, analysis and reporting of data investigations; use of a statistical package; modelling data; relationships between variables; estimation; confidence intervals; tolerance limits; hypothesis testing; fitting and investigating relationships; regression; design and analysis of experiments; risk; random variables; special distributions; linear combinations of correlated variables; reliability. The introduction to computational mathematics includes: function approximation; polynomial interpolation; numerical solution of ordinary differential equations.
Prerequisites: MAB131 or MAB182 or MAB121 or MAB126 or MAB127  Antirequisites: BSB123  Credit points: 12  Contact hours: 4 per week  Campus: Gardens Point  Teaching period: 2010 SEM-1

SCB110 SCIENCE CONCEPTS AND GLOBAL SYSTEMS
You will undertake interdisciplinary study of the physical, geological and biological concepts relating to the origins of life; from the creation of matter and planets, to the emergence of life in all its complexity, culminating in evolution of earth ecosystems. Human influences, overlain upon earth’s complex systems, will be examined as to their type, extent, and impact. In counterpoint, you will explore the breadth of philosophical developments underlying our search for knowledge; fundamental thoughts and ideas that span the last 2,500 years of human history. Ultimately, these concepts evolved through the development of a scientific method and we explore its workings in relation to the ongoing enterprise of human understanding.
Credit points: 12  Contact hours: 4.5 per week  Campus: Gardens Point  Teaching period: 2010 SEM-1