Course
Graduate Diploma of Facilities Management

Course Code
V14340

Location
Chadstone Campus - taught on and off campus

Contact
Immanuel Vyas, Academic Administration Manager:
immanuel.vyas@holmesglen.edu.au
### Subject Overview

In this subject, students study the origins, scope and trends in the evolution of facilities management as a foundation for further studies in the discipline. They will critically evaluate the FM needs of an organisation with respect to change management and productivity improvement. They will develop an understanding of the concept of strategic facilities management and be able to evaluate the strategic context of an organisation with respect to its objectives and environment and develop a strategic FM plan. Student will also analyse and formulate new strategies to expand organisational capabilities.

The following topics will be covered within a problem-based learning process:

- Facility Life Cycle Performance
- Factors Influencing Life Cycle Performance
- Life Cycle Cost Concepts and Techniques
- Maintenance and Capital Decisions
- Post-Occupancy Evaluation and Costs
- Sustainability
- Case Studies on Facilities Performance

This subject focuses on the core facilities management functions of space and building management. At the operational level, space management requires a systematic approach to needs analysis and decision making, including optimisation modelling, cost-benefit analysis and other relevant techniques. Building management includes the management of hard (operation of plant and equipment) and soft (ancillary services such as cleaning and contractor management) building services. At a strategic level, these functions involve portfolio management and capital and investment planning that is linked to the achievement of the organisations overall strategic objectives. The operational and strategic management functions will be explored in this subject, as will the impact of technology on smart services; space usage and building management will also be explored.

### Learning outcomes

- Analyse and explain the origins of the concept of facilities management
- Analyse and explain the concept of strategic facilities management and distinguish this from operational facilities management
- Analyse corporate property management principles and formulate appropriate strategies to meet business objectives
- Identify and evaluate the ramifications of the facilities management needs of an organisation to manage workplace change and improvement
- Critically analyse the strategic context of an organisation and assess this in relation to complex facilities management issues
- Evaluate the objectives of, and develop a comprehensive strategic facilities management plan for a major organisation
- Explain the concept of facility life cycle performance and its implication for productivity and performance
- Identify the factors and components that contribute to the life cycle performance of a facility and assess and analyse the interrelationships between them
- Evaluate the life cycle performance characteristics of building components, finishes and equipment and formulate appropriate maintenance plans and replacement interventions
- Apply and produce a life cycle analysis and plan to support maintenance and capital decisions
- Generate comprehensive maintenance, capital replacement and refurbishment plans to maintain optimal facility performance
- Assess appropriate information on capital and maintenance items and prepare operational and capital budgets and tax depreciation schedules
- Evaluate the on-going performance of a complex facility and its varied components in accordance with developed key performance indicators for efficiency, effectiveness and stakeholder satisfaction
- Apply the principles of post-occupation evaluations to formulate a framework to evaluate facility life cycle performance and critique the effectiveness of this process
- Analyse, assess and interpret the importance of space as a driver of organisational costs and performance
- Explain the concept of virtual space and evaluate its potential in facilities management
- Implement the principles of space and portfolio management to the management of the operational and strategic objectives of a complex organisation
- Analyse the spatial requirements of organisational accommodation including: maintenance, cleaning, energy, water and sewerage, waste management, communications, security, environmental management
- Assess and make recommendations on the range, functions and applications of smart technologies that underpin building management systems (BMS), building energy management systems (BEMS), integrated, flexible and intelligent services, computer-aided facilities management (CAFM) and computerised maintenance management systems (CMMS)
- Formulate and justify strategic and operational plans encompassing smart services and space usage to improve organisational performance
- Explain the principles of supply chain, logistics and just-in-time (JIT) management and procurement alternatives such as development, purchasing, leasing and outsourcing are examined. The principles of contract management are applied to procurement arrangements. The implications of electronic procurement for the organisational procurement function are considered.
- Students will learn to apply cost-benefit analysis in situations of certainty and uncertainty, at operational and strategic levels, to evaluate procurement options.
- The integration of procurement activities into organisational quality management and facilities management information systems, and the strategic implications of procurement management on organisational strategies, are also considered.

### Weekly contact

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### Subject Overview

**Graduate Diploma of Facilities Management**

**Subject title Improvement of Facility Performance**

**FM Information Management**

**Risk Management in Facilities Management**

**Approved Elective**

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#### Subject Overview

This subject focuses on applying concepts of value, quality and environment management to improving facility performance at both the operational and strategic levels.

Students will apply their learning to the analysis of a case study project and formulate appropriate strategies for continual improvement of facility performance.

In this subject, students will learn and apply principles of information management to facilities management, including identification, mining and management of sources of data, and using a structured approach to conducting facility management audits as part of facility management information management.

They will also extract and analyse relevant data for the preparation of ad-hoc and regular reports, for establishing key performance indicators and benchmarking.

Best practice for facility management information management will be considered, including issues of data integrity and security.

- Identify, explain and apply principles of risk management and generic risk management processes to the operational management of facilities
- Identify, explain and apply principles of risk management to strategic management and strategic facilities management and evaluate the efficacy of this process
- Evaluate the professional risks and responsibilities associated with the practice of facilities management
- Apply relevant codes of ethics and rules of conduct to the professional practice of facilities management and formulate risk plans
- Develop a risk management plan for complex procurement requirements and critique its strengths and limitations
- Identify and explain the principles of disaster and recovery planning
- Develop and evaluate a disaster recovery plan for maintaining core facility capability

#### Learning outcomes

- Determine and interpret the principles of value management applied to improving facility performance
- Identify and incorporate the principles of environmental management (ISO AS/NZS 14000) applicable to strategic and operational facilities management and discuss ramifications of these principles
- Critically assess strategic analyses to identify key areas of facility performance improvement that can underpin organisational strategic planning in a given context
- Formulate change management strategies from a facilities management perspective to implement policies for improving facility and organisational performance
- Analyse facility performance and formulate strategies to improve facility performance in terms of energy performance, water usage, health and safety, comfort and utility, environmental sustainability and productivity and measure the value of these improvements
- Devise compliance programs relevant to improving facility performance (energy efficiency opportunities program, environmental resource efficiency plans)
- Develop relevant key performance indicators to monitor current practices in facility performance and improvements
- Identify, interpret and evaluate the principles of organisational information management for strategic and operational facilities management applications
- Identify sources of facilities management data and organise these in operational databases and critique the use and application of this database
- Design and analyse facilities management audits, including energy, water, waste and carbon emissions audits and critique strengths and limitations of this audit process
- Analyse facilities management data to generate routine and ad-hoc reports to support facilities management and organisational functions, and hypothesise as to how this could improve organisational performance
- Explain the concepts and assess the mechanisms of energy and carbon accounting
- Formulate and apply key performance indicators to evaluate and benchmark facilities management performance and organisational performance impacted by facilities management functions
- Formulate best practice for facilities management information management in an organisation
- Identify, explain and apply principles of risk management and generic risk management processes to the operational management of facilities
- Identify, explain and apply principles of risk management to strategic management and strategic facilities management and evaluate the efficacy of this process
- Evaluate the professional risks and responsibilities associated with the practice of facilities management
- Apply relevant codes of ethics and rules of conduct to the professional practice of facilities management and formulate risk plans
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#### Weekly contact

- 3 hours
- 3 hours
- 3 hours

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Code  | GDCM801 | GDCM802 | GDCM803 | GDCM804
Credit points  | 6 | 6 | 6 | 6
Core/Elective  | Elective | Elective | Elective | Elective

**Subject Overview**

In this subject, students will build on assumed basic instruction and cost management knowledge and skills, to analyse and evaluate the professional roles of construction managers and quantity surveyors/cost engineers during the project inception and feasibility analysis stages of a building project, and develop the skills and knowledge in project brief analysis, evaluation, formulation, and feasibility analysis to contribute to this process at a complex level.

In this subject, students will develop an understanding of the concept of buildability/constructability and the principles that are applicable to the different life cycle stages of a building project. They will learn to apply these principles through the analysis of a building project and develop constructability implementation plans from the perspective of construction and cost managers.

Students will review literature representing the industry research work carried out primarily in the UK, the USA and Australia, and investigate the applications of this concept for industry productivity and innovation. A specific case study of the mandated application of Buildability scores in building design in Singapore will be investigated.

The subject takes a holistic approach to the needs of the project team for cost planning during design and focuses on the principles, skills and knowledge contributions by construction management and cost management professionals to this activity. Students investigate and evaluate the appropriateness of various estimating techniques for different project contexts and critique the advantages and disadvantages of value engineering in a design review process.

In addition, the subject focuses on the application of value management to the design stage of the building project as part of innovative design cost planning. Students will be expected to demonstrate competence in measurement of a developed design through an examination process.

The subject critically analyses conventional and innovative approaches to project procurement and develop an understanding of how the roles and responsibilities of professional construction managers and cost managers to formulate and participating in the different approaches can vary. Issues raised by recent reviews and commissions (such as the Egan and Latham industry reviews, and the Gyles and Cole Royal Commissions) and the implications for project procurement approaches are considered and critiqued. Success factors that underpin project team performance are identified and how these factors may be impacted by project size, complexity and context is assessed.

The structure of innovative procurement strategies based on partnering and relationship contracting models, including integrated design-construction models, public-private partnerships and forms of private financing arrangement are analysed, compared and contrasted to contractual approaches as well as other. This comparison includes discussion of the strengths and weaknesses of each procurement approach in terms of fragmentation in the industry, communication, coordination and competition between project stakeholders.

The principles of value-based selection of integrated design and construction teams are compared with the traditional model of lowest price tendering. This is the key to implementing innovative procurement strategies. The impact of technology and innovative procurement strategies on procurement processes, such as electronic procurement, are also considered.

The importance of project constraints, objectives and context as considerations impacting the selection of procurement strategies when developing the strategic procurement framework is assessed.

**Learning outcomes**

- Assess relevant drivers of project development, including economic, social and political factors, and evaluate their potential impacts for complex projects
- Analyse and appraise the motivations, needs and objectives of construction clients during project inception and the role of construction and cost managers in addressing these during the feasibility evaluation
- Establish, explain and interpret the principles of feasibility analysis applicable to complex and non-standard projects
- Apply procedures to evaluate feasibility of projects at early design stage and critique the strengths and limitations of these procedures to feasibility evaluation at this stage
- Analyse and manipulate financial, design and planning factors at project inception stage to establish a feasibility options for complex projects
- Explain the concept of constructability, its application to a defined scope in a building project, and its implications for productivity and innovation
- Identify and explain the principles of constructability applied to the different life cycle stages of a building project
- Establish and assess the roles and responsibilities of professional construction and cost managers in contributing to the constructability performance of a building project and how this may vary with the complexity of the project
- Critically analyse and evaluate a given complex building project situation and assess relevant constructability factors to be managed to improve project performance
- Formulate a constructability plan for a building project by applying a generic framework of constructability principles
- Explain the concepts of design cost planning and their application in the context of construction management and economics
- Select and apply appropriate estimating techniques to costing an evolving design process for complex projects
- Establish and evaluate the role of a cost consultant in managing a design process to meet project brief and budget requirements
- Explore and critique the principles of value engineering as applied to a design review process as part of design cost planning and management
- Carry out and assess functional analyses on project design proposals to facilitate value management
- Measure building, civil and services works for major projects and provide cost advice to a project team during the design development process on the basis of estimates commensurate with the level of design detail
- Explain the role of professional construction and cost managers in delivering value through appropriate procurement strategies for complex building projects
- Establish and evaluate the principles, structures and success factors of different project procurement strategies including partnering and relationship contracting, public-private partnerships and private financing of projects
- Describe the evolution of project teams and analyse and assess the roles, responsibilities and motivations of the various stakeholders in different procurement arrangements, and establish the appropriate allocation of risks in these arrangements
- Establish the probity requirements of clients and members of professional teams and evaluate how these impact on project procurement strategies
- Assess the principles of value-based selection of project teams and their relative advantages over price-based tendering, and apply these to formulating...
Graduate Diploma of Facilities Management

- Justify the importance of briefing to the ultimate performance and success of complex projects
- Formulate project briefs for design-bid-build and design-build projects, and non-conventional procurement approaches, using a generic framework
- Develop strategic procurement strategies to meet the needs of project sponsors and maximise value potential
- Evaluate the principles and implications of electronic procurement practices on improving project procurement
- Advice on tendering processes and tender evaluation.

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## Electives continued

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<td>Advanced Contract and Cost Management Performance</td>
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### Subject Overview

**Advanced Contract and Cost Management Performance**

In this subject, students critically analyse the principles of lean construction, re-engineering, total quality management, benchmarking and environmental management and consider their application across the range of conventional and innovative procurement contract arrangements, including design-bid-build, design and construct, construction management, relationship contracting and private financing arrangements (including build-operate-transfer (BOT), build-operate-own (BOO), build-operate-own-transfer (BOOT), private-financing-initiative (PFI), public-private-partnerships (PPP)). The principles of relationship management and factors pertaining to effective application of these principles are also critiqued and evaluated in the context of facilitating project team integration and supply chain management. The applications of these and related additional issues in international construction projects are also debated and evaluated.

The role and responsibilities of construction and cost managers in decision making that contributes to maximising the value of buildings in the operational stage of their life cycle is explored. The principles of life cycle costing and the triple bottom line, and the concepts of energy and carbon accounting, are examined, and their application to materials and components selection and specification decisions are assessed and evaluated.

Students will be able to critically analyse the use of relevant cost planning and management techniques to devise cost plans and schedules for buildings in use, including sinking fund schedules, tax depreciation schedules, insurance schedules, asset valuation, maintenance and refurbishment plans.

These principles and techniques will be critically reviewed in the context of current industry developments and issues in cost planning and management techniques and debates and analyses in the literature.

This subject covers these principles of risk management in the context of the professional practice of construction management and economics.

The subject develops an overview of urban development and planning theory and practice in Australia and explores contemporary issues related to: land management, land use, energy conservation, urban design, city planning, spatial design and urban policy.

The significance of local planning schemes and the process of zoning land for particular use, such as residential, retail, educational use, public use, industrial, light commercial, rural, is critically examined and a comparison is drawn between historical and contemporary land use principles.

The sources and relative importance of demographic and statistical data in determining and reviewing appropriate land use and zoning are also examined. Types of demographic and statistical data currently available in Australia for urban planning purposes are identified with reference being made to the importance of: age-sex structure; population density; population growth and change by region; income; occupational and industrial structure; education; and place of birth and residence.

The statutory requirements relating to impact assessment statements are considered, along with local government planning schemes, planning strategies and acts of Commonwealth and various state parliaments, including the Environmental Protection Act 1994, the Planning and Environment Act 1987 and the Environment Protection and Biodiversity Conservation Act 1999. The differences between environmental impact statement (EIS) and environmental effects statements (EES), as required under the Environment Effects Act 1978 (Victoria), are explored.

The roles and responsibilities of individuals, governments, authorities, agencies, private companies and the wider community are explored in the context of urban development and planning. Students will review local and state planning schemes and permit processes, including the consequences resulting from unlawful or unconscionable conduct.

The subject also considers localised urban development topics, including streetscape design, townscape, transport and traffic engineering and the impact of metropolitan planning strategies, heritage considerations and neighbourhood character on the urban environment.

The increasing imperative to provide socially, economically and environmentally sustainable developments is considered in the context of urban planning. This also takes into account the implications of sustainable development for existing...
The role of data collection and assessment relating to urban development is considered, including utilisation of various Geographic Information Systems (GIS), mapping, photography, photogrammetry (aerial and terrestrial) and data collection and assessment methods.

### Learning outcomes

<table>
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<tr>
<th>Task</th>
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<tr>
<td>Assess and apply the principles of lean construction, re-engineering, total quality management, benchmarking and environmental management to contract and cost management of building projects during construction</td>
<td>Identify, explain and apply principles of risk management to the construction and cost management of a building project through its life cycle</td>
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<td>Establish, evaluate, and apply the principles of relationship management during the construction stage of a building project to facilitate project team integration and supply chain management</td>
<td>Establish and evaluate the professional risks and responsibilities associated with the practice of construction management and quantity surveying/cost engineering</td>
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<tr>
<td>Determine and appraise the cultural, technical, legal and organisational issues that are involved in international construction in relation to contract and cost management and the ramifications of these issues on project performance.</td>
<td>Critically analyse and interpret the concepts of energy and carbon accounting and incorporate these in the evaluation of selection and specification options of building materials, components, finishes, services, plant and equipment</td>
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<tr>
<td>Develop strategies for the finalisation of a building contract to minimise disputation and maximise value for all stakeholders</td>
<td>Critically examine and interpret the concepts of energy and carbon trading system and incorporate these in the evaluation of selection and specification options of building materials, components, finishes, services, plant and equipment to meet environmentally sustainable development objectives and within a carbon trading system</td>
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<td>• Develop strategies for the finalisation of a building contract to minimise disputation and maximise value for all stakeholders</td>
<td>• Analyse and interpret the theory and practice of urban planning and development in Australia, including relevant contemporary issues</td>
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<th>Fire Engineering</th>
<th>Performance Based Compliance</th>
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### Subject Overview

**The subject covers a generic framework for risk assessment and management from relevant Australian Standards, for example AS4300:2004, and applies this to the context of the built environment.**

- **Risk Assessment and Management for Building Surveying**
  - This subject covers an overview of building inspection and building surveying fundamentals, including site inspection procedures, identification and rectification of building defects, legislation relating to the role of a private building surveyor, legal and ethical responsibilities of both private and municipal building surveyors, and public safety.
  - It addresses compliance of building work procedures through the use of case studies, including identifying items of non-compliance and issuing statutory defect notices or emergency orders under relevant building legislation and regulations.
  - Defects arising out of poor workmanship and non-compliant building work are distinguished.
  - Statutory authority, federal, state and/or local government requirements and procedures related to building inspection and building surveying are examined. Emphasis is placed on quantity surveying, project and construction management procedures, and their relevance to effective and professional building surveying practice.
  - The differences between the role of statutory and private building surveyors in the construction industry are discussed.

**Advanced Building Surveying**

- This subject provides an introduction to fire science, fire engineering and modelling in the context of building surveying practice.
- It provides an understanding of combustion, fire initiation, smoke, fire behaviour and combinations and interactions of these and other factors that contribute to potential fire hazards.
- Computer software modelling applications are introduced to enable students to assess the impact of fire loads and growth patterns.
- Design requirements to meet Australian and International Standards and requirements of relevant performance based codes are examined, including fire and smoke detection and alarm systems, and fire extinguishment and fire suppression methods and systems (including fire sprinklers, drenchers and gas suppression systems, exit distances and fire and smoke compartmentation sizes).
- The inter-relationship and interaction of human behaviour and movement and fire safety measures is critically analysed.
- The principles used for performance based design and the assessment methods contained within the Building Code of Australia, including verification methods listed or not listed in the Building Code of Australia, are addressed. The application and performance of these methods are also considered, including an evaluation of the impact of these methods on project cost and quality.
- The potential benefits from using performance based solutions, in place of deemed-to-satisfy provisions under the BCA, are explored in terms of the stakeholders in the building process, including the owner, building surveyor, builder and building occupants. The potential disadvantages of using performance based solutions are also explored, including the impact on building maintenance and future building refurbishment, and potential liability implications of insurers excluding performance based solutions from their policy as a result of higher exposure to risk.
- The roles and responsibilities of all parties involved and affected by the decision making process of a performance based solution, and the communication and documentation required, are considered.
- Fire safety engineering and energy efficiency in buildings are used as case studies to explore the typical application of performance based solutions in Australia.
- The impact of fire safety engineering and energy efficiency on building management and maintenance systems is explored, including changes to statutory reporting and administrative requirements, and advisory publications that could be referenced when undertaking performance based assessments.
- The interpretation of the term 'to the degree necessary' is analysed and the impact this may have on performance based solutions is considered. In this context, the importance of professional judgement and ethical skills when assessing proposed performance based solutions is also considered.
**Learning outcomes**

- Identify, explain and apply principles of risk management and generic risk management processes to building surveying
- Identify, analyse, evaluate and treat risks relating to urban planning and building surveying
- Evaluate and document risk management processes
- Utilise statistical analysis in risk assessment
- Identify and assess the professional risks and responsibilities associated with the practice of building surveying
- Interpret and apply relevant regulations, codes of ethics and rules of conduct to the professional practice of building surveying
- Apply and adapt risk management procedures to building surveying practices and formulate risk management plans
- Identify and evaluate possible inter-disciplinary relationships that may impact building surveying risk assessment and management
- Undertake statutory inspections of building footings, framing and finished product and assess compliance with the building permit and/or contract documentation
- Detect, examine and interpret defects in building work, and items of non-compliance with codes, regulations and standards
- Evaluate building defects and recommend appropriate remedial action
- Distinguish between poor workmanship and non-compliant building work, and provide feedback to the client
- Identify and assess situations or procedures that are hazardous, or a threat to occupational health and safety, and recommend appropriate remedial action
- Review and assess building maintenance documentation for compliance with maintenance of essential safety measures under building regulations and propose appropriate remedial action
- Evaluate energy efficiency performance of existing and planned developments and recommend possible improvement measures
- Establish and evaluate the professional, ethical and legal responsibilities of building surveyors, and contrast the role of statutory and private building surveyors
- Identify and evaluate potential fire hazards, and potential ramifications of fire
- Critically analyse design documentation to determine fire loads and assess probable impacts
- Use computer software applications to model fire growth and behaviour and evaluate potential impacts
- Establish the effects and toxicity of smoke, and possible impacting factors and ramifications in building contexts
- Assess the impact of human behaviour and movement on fire safety measures within the built environment
- Recommend and justify appropriate fire detection, suppression and extinguishment measures
- Interpret and evaluate performance based fire engineering designs and propose design improvements where appropriate
- Distinguish the differences between established deemed-to-satisfy protocols and professional judgement relating to performance based solutions
- Critically analyse and evaluate documentation for performance based solutions
- Justify and document performance based solution decisions, and prepare appropriate assessment reports
- Establish and evaluate the advantages and disadvantages of performance based solutions in relation to the impact on building maintenance and refurbishment and potential liability implications
- Discuss and evaluate the principles of professional and ethical responsibilities in the role of building surveyors when ensuring the compliance of building work with regulatory requirements
- Evaluate and justify the potential benefits in using performance based solutions in place of deemed-to-satisfy provisions
- Appraise the impact of a performance-based regulatory system on project cost and quality and the Australian construction industry

**Weekly contact**

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<td>Examination: 3 hours, open book – 40%</td>
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### Electives continued

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<th>Structural and Materials Performance</th>
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<td><strong>Code</strong></td>
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<td><strong>Credit points</strong></td>
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<td><strong>Core/Elective</strong></td>
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**Subject Overview**

This subject focuses on understanding of building structures and materials performance and the application of this in building surveying practice.

The characteristics of materials used in structural applications are examined and applied to the evaluation of building structure performance. Analytical techniques that can be utilised when designed and devising structural problem solutions are examined and their appropriateness in differing contexts compared and contrasted. Inter-disciplinary relationships that impact engineering solutions are also debated and evaluated.

The application of engineering design principles to the different contexts of sub-structure, super-structure and temporary and permanent soil retaining structures are reviewed.

**Learning outcomes**

- Evaluate structural concepts and the appropriate analytical techniques for the solution of structural problems
- Critically analyse and interpret site investigation reports, identify problem soil and foundation conditions and propose appropriate engineering solutions
- Assess and critique the appropriateness of engineering solutions for footing design
- Explain the causes of soil instability and the engineering behaviour of soil retaining structures
- Compare the characteristics (strength, durability, causes of deterioration, protection) of structural timber, steel, concrete and masonry, and evaluate the proposed use of these materials in structural applications.
- Evaluate the characteristics of various construction forms and materials, and assess and interpret the structural design principles applicable to building structure performance
- Analyse and interpret structural design documentation and apply the concepts for the assessment of calculations to verify documented designs

**Weekly contact**

3 hours

**Assessment (%)**

- Major assignment 1: 30%
- Major assignment 2: 30%
- Examination: 3 hours, open book – 40%