Bachelor of Engineering (Honours)

› Aerospace Engineering
› Mechanical Engineering

› Ranked 6th in Australia and amongst the World’s Top 100 Mechanical, Aeronautical & Manufacturing Engineering (2015 QS World University Rankings by Subject)
› 5-Star University (QS Ranking for Excellence)
› Among Top 15 Universities in Australia (2014 QS World University Rankings)
RMIT is delighted to have entered into a new partnership with Kaplan Higher Education in Singapore. The partnership brings together two highly regarded global institutions committed to excellence in learning and teaching.

RMIT has a 5-Star QS ranking for excellence in higher education and is ranked among the top 15 Australian universities in the 2014 QS World University Rankings. In the 2014 QS Top 50 Under 50 index, RMIT was ranked 32nd in the world among universities less than 50 years old.

A Kaplan/RMIT student will be part of RMIT University's global community. With 82,000 students, of whom more than 17,000 are taught offshore, RMIT is a recognised global leader in international education.

As well as the 6,260 students at our campuses in Ho Chi Minh City and Hanoi, RMIT enrolls 11,000 students through 18 partners in Asia and in Europe and has research and industry linkages on every continent.

RMIT prides itself on the strong links it has forged with universities, industry partners and communities world-wide over its 128-year history. The University has delivered partnership programmes in Singapore for 27 years and was the first foreign university to have an engineering programme accredited by the Institution of Engineers Singapore.

Our new Kaplan/RMIT Bachelor of Engineering reflects our objective to increase the range of programmes we offer in this rapidly growing region.

We look forward to working closely with Kaplan to help individuals achieve their educational and career goals.
Kaplan Higher Education Institute is part of Kaplan, Inc., a leading international provider of educational and career services for individuals, schools and businesses. Kaplan serves students of all ages through a wide array of offerings, including higher education and professional training. Kaplan, Inc., is a subsidiary of Graham Holdings Company (NYSE: GHC) and its largest division. Today, thousands of students are enrolled in Kaplan Higher Education Institute in Singapore, pursuing part-time programmes that range from diplomas to Bachelor’s and Master’s degrees.

Through collaboration with prestigious Australian and European universities, Kaplan offers career-oriented academic programmes designed to provide students with the skills necessary to qualify them for employment in the fields of Accounting & Finance, Business & Management, Communication & Media, Hospitality & Tourism Management, Humanities & Social Sciences, Information Technology, Law and Nursing & Allied Health.

The Kaplan City Campuses

Kaplan is one of the largest private education institutions in Singapore, spanning over 140,000 sqft, over 2 campuses. The campuses are located in the heart of the city, a 10-minute walk away from Dhoby Ghaut MRT Interchange station and within 30 minutes from any part of the island. With a focus on providing students with a conducive study environment, both Kaplan City Campus @ PoMo and Kaplan City Campus @ Wilkie Edge are equipped with state-of-the-art classrooms & computer labs, high-speed wifi, study & relaxation lounges, a comprehensive library and easy access to food & beverage outlets on campus.
RMIT UNIVERSITY

RMIT University

RMIT is a global university of technology and design, focused on creating solutions that transform the future for the benefit of people and their environments.

One of Australia’s original educational institutions founded in 1887, RMIT University now has more than 80,000 students. The University enjoys an international reputation for excellence in professional and vocational education, outcome-oriented research, and engagement with the needs of industry and the community.

With three campuses in Melbourne, two in Vietnam and a centre in Barcelona, Spain, RMIT is a truly global university. We also offer programmes through partners in Singapore, Hong Kong, mainland China, Indonesia, Sri Lanka, Vietnam, Belgium, Germany, Austria and the Netherlands, and enjoys research and industry partnerships on every continent.

RMIT is a leader in engineering, accounting and finance, computer science and information systems, communication and media studies, psychology, education, law and economics.

From the design of curriculum to applied research, RMIT works closely with domestic and international partners to equip students with the knowledge and state-of-the-art skills that enable them to excel in their chosen professions. As a result, our graduates are highly regarded around the world for their leadership skills and work readiness.

For more information visit www.rmit.edu.au

Professional Recognition

The Washington Accord

The Washington Accord, also known as International Engineering Alliance, is an international agreement among bodies responsible for accrediting engineering degree programmes. The Accord provides reciprocal recognition of the substantial equivalency of programmes accredited by those bodies and recommends that the other bodies as having met the academic requirements for entry to the practice of engineering recognise graduates of programmes accredited by any of the signatory bodies. Australia and Singapore are two of 15 countries that are signatories of this Accord. The qualification of graduates from this degree is recognised in all countries that are signatories of this Accord. For further information visit: www.washingtonaccord.org.

Engineers Australia

RMIT University Bachelor of Engineering programmes are accredited by Engineers Australia. Graduates of the programmes will be eligible for a graduate membership of Engineers Australia once fully accredited. Full membership as a professional engineer may be obtained after an appropriate period of professional practice.

Industry Links

RMIT’s School of Aerospace, Mechanical and Manufacturing Engineering has a Programme Advisory Committee for the Aerospace programme, which is an important link to industry. Membership consists of senior engineers from a number of major national companies and government and non-government organisations.

RMIT UNIVERSITY

Why Choose RMIT University?

Rankings

• 5-Star University (QS Ranking for Excellence)
• 32nd in the world among universities less than 50 years old (2014 QS Top 50 Under 50 index)
• Among top 15 universities in Australia*
• 32nd in the world for the international profile of academic staff*
• 40th in the world for the international profile of student cohort*
• 79th in the world for employer reputation*
• Among the world’s top 100 universities in Engineering (Civil and Structural; Electrical and Electronic; and Mechanical, Aeronautical and Manufacturing) (2015 QS World University Rankings by Subject)

*2014 QS World University Rankings

Research

• RMIT’s research has been endorsed by the Australian Research Council and has a global reputation for excellence in applied and innovative research and engagement with the needs of the industry
• RMIT is one of the Top five Australian universities for excellence in key research disciplines, with 85 per cent of our research outputs rated at “above” or “well above” world standard
• One of the five members affiliated with Australian Technology Network (ATN), RMIT is committed to forging partnerships with industry and government to deliver practical results through focused research

School of Aerospace, Mechanical and Manufacturing Engineering

• Designed sophisticated, high performing racing cars including alternative racing technologies (solar, hydrogen, electric).
• Took bold steps and impressive progression in energy conservation and renewable energy technologies
• In collaboration with the US on designing and building a military fighter jet engine
• Leader in virtual engineering technologies capable of simulating complex systems and processes
• Develop novel automotive technologies in collaboration with leading vehicle manufacturers and suppliers in Australia and overseas
• Advance the capabilities of heavy-lift helicopter with a design that enables it to lift battle tanks for the Australian Defence Force

For more information visit www.rmit.edu.au
The overall objective of this programme is to provide you with the skills to become an employable and effective aerospace engineer within a national and international context. It is designed to prepare you for a wide range of career possibilities by developing particular graduate attributes which will be of on-going benefit to you, your industry and society as a whole.

As a graduate of this programme, you will have been prepared to practise as an effective, high-level engineer. You will have demonstrated the ability to utilise fundamental knowledge and skills in mathematics and the sciences which underpin engineering. You will have demonstrated sound skills and appropriate understanding of disciplines relevant to aerospace engineering and its practice. You will have demonstrated suitable design skills, appropriate creativity, intellectual discipline, and professional skills relevant to working with others.

In addition to this, you will have demonstrated the ability to communicate your ideas in a way appropriate to your profession and to the wider community. You will also have demonstrated your ability to learn in a self-directed way that will support professional extension in your working life and that will lead you to adapt through technological and social change. Furthermore, you will have demonstrated your ability to investigate complex problems using research-based knowledge and research methods.

The Aerospace Engineering programme as a whole has a real-world focus with a problem/project based active learning approach. In your programme, you will be exposed to the fundamentals of engineering sciences, engineering design and specialist aerospace engineering modules to expand your knowledge in various streams of expertise. The academic staff members teaching the module are highly regarded aerospace engineering practitioners and the programme is designed to provide you with a number of opportunities for interaction with industry.

RMIT Aviation Simulation Laboratory

RMIT’s $200,000 state-of-the-art aviation simulation and test laboratory, developed in conjunction with SimRoom, will support research into new communication, navigation, surveillance and avionics systems for manned and unmanned aircraft, as well as decision-support tools and human machine interfaces.

The laboratory also features sophisticated eye and head tracking equipment that will allow students to study human performance in the monitoring and control of aircraft. The 250-degree, floor-to-ceiling, high definition visualisation and motion system, provides a realistic experience for students, who, through the push of a button, can fly aircraft ranging from small four-seat planes, commercial passenger aircraft through to modern jet fighters.

Programme Structure & Content*

<table>
<thead>
<tr>
<th>TRIMESTER</th>
<th>COURSES</th>
<th>CREDITS</th>
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<tbody>
<tr>
<td>1</td>
<td>Introduction to Aircraft, Mechanics and Materials 2</td>
<td>12 credits</td>
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<tr>
<td>2</td>
<td>Aerodynamics and Flight Mechanics, Systems Engineering</td>
<td>12 credits</td>
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<tr>
<td>3</td>
<td>Dynamics, Airport Planning and Management</td>
<td>12 credits</td>
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<tr>
<td>4</td>
<td>Aerospace Propulsion, Aero Finite Element Methods</td>
<td>12 credits</td>
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<tr>
<td>5</td>
<td>Aerospace Structures, Management of Aerospace Design and Research</td>
<td>12 credits</td>
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<tr>
<td>6</td>
<td>Aerospace Dynamics and Control, Advanced Aerodynamics</td>
<td>12 credits</td>
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<td>7</td>
<td>Aerospace Design Project, Airline Operations</td>
<td>12 credits</td>
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<tr>
<td>8</td>
<td>Professional Research Project 1</td>
<td>24 credits</td>
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<tr>
<td>9</td>
<td>Professional Research Project 2</td>
<td>24 credits</td>
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</tbody>
</table>

* The above structure is only for reference, students will be provided with the timetable for the upcoming intake.

** Students are required to attend two, 1-week on-campus workshops in Melbourne, Australia, held between trimesters in the month of January. The workshop must be undertaken during the programme of study. Students must complete all activities within the workshop in order to become eligible to graduate. There is no additional fee for attending this workshop, however, students will be responsible for covering the cost of their own travel and accommodation expenses.
The overall objective of this programme is to provide you with the skills to become an employable and effective mechanical engineer within a national and international context. It is designed to prepare you for a wide range of career possibilities by developing particular graduate attributes which will be of on-going benefit to you, your industry and society as a whole.

As a graduate of this programme, you will have been prepared to practise as an effective, high-level engineer. You will have demonstrated the ability to utilise fundamental knowledge and skills in mathematics and the sciences which underpin engineering. You will have demonstrated sound skills and appropriate understanding of disciplines relevant to mechanical engineering and its practice. You will have demonstrated suitable design skills, appropriate creativity, intellectual discipline, and professional skills relevant to working with others.

In addition to this, you will have demonstrated the ability to communicate your ideas in a way appropriate to your profession and to the wider community. You will also have demonstrated your ability to learn in a self-directed way that will support professional extension in your working life and that will lead you to adapt through technological and social change.

The Mechanical Engineering programme, as a whole, has a real-world focus with a problem-/project-based active learning approach. In your programme, you will be exposed to the fundamentals of engineering sciences, engineering design and specialist mechanical engineering modules to expand your knowledge in various streams of expertise. The academic staff members who teach the module are highly-regarded mechanical engineering practitioners and the programme is designed to provide you with a number of opportunities for interaction with industry.

### Programme Structure & Content*

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<thead>
<tr>
<th>TRIMESTER</th>
<th>Modules</th>
<th>Credits</th>
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<tr>
<td>1</td>
<td>Mechanics of Machines 1***</td>
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<tr>
<td></td>
<td>Mechanics of Fluids and Solids 2</td>
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<td>2</td>
<td>Dynamics and Control***</td>
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<td></td>
<td>Solid Mechanics 3</td>
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<td>3</td>
<td>Further Thermo-Fluid Mechanics***</td>
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<td></td>
<td>Renewable Energy Systems</td>
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<tr>
<td>4</td>
<td>Mechanics of Machines 2***</td>
<td>12</td>
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<td></td>
<td>Advanced Engineering Control***</td>
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<td>5</td>
<td>Finite Element Analysis</td>
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<td></td>
<td>Management of Mechanical Design and Research</td>
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<td>Mechanical Design 2</td>
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<td></td>
<td>Applied Heat and Mass Transfer</td>
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<tr>
<td>7</td>
<td>Professional Research Project 1</td>
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<td>8</td>
<td>Professional Research Project 2</td>
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</tbody>
</table>

*Residential 1 in Melbourne**

**Students are required to attend two, 1-week on-campus workshops in Melbourne, Australia, held between trimesters in the month of January. The workshop must be undertaken during the programme of study. Students must complete all activities within the workshop in order to become eligible to graduate. There is no additional fee for attending this workshop, however, students will be responsible for covering the cost of their own travel and accommodation expenses.

***Modules will be renamed with effect from 1 November 2015.
A typical trimester is a 16-weeks period covering 2 courses. Lessons are conducted by RMIT lecturers and local supporting lecturers appointed by RMIT via block teaching. The advantage of this structure is that busy professionals can manage work and studies at the same time.

**Sample Lesson Schedule**

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
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<tbody>
<tr>
<td>Weekdays</td>
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<tr>
<td></td>
<td>09:00 - 13:00</td>
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<tr>
<td></td>
<td>14:00 - 18:00</td>
</tr>
<tr>
<td></td>
<td>18:30 - 22:30</td>
</tr>
<tr>
<td>Weekends</td>
<td></td>
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</tbody>
</table>

**Assessment Scheme**

Each module will be assessed by class participation, written assignments and/or examinations. Examinations will normally be held after office hours.

**Residential Visits in Melbourne**

The degree structures require students to fly to Australia in January to spend part of the course at RMIT University to gain practical hands-on experience in Melbourne. Students will access a wide range of state-of-the-art laboratory facilities at RMIT including; a full scale industrial aircraft wind tunnel, advanced manufacturing precinct, renewable energy park, composites laboratories and a virtual flight simulator. Student will also benefit from field trips to RMIT’s industry partners.

**Programme Management**

The Bachelor of Engineering (Aerospace Engineering) (Honours) and Bachelor of Engineering (Mechanical Engineering) (Honours) programmes will be managed by a professional programme management team, which will ensure that in addition to tutorials and lectures, students will receive support on important areas, such as the service of a programme manager/executive, regular programme newsletters (updates) via email, academic support system via email or other online resources, textbooks, study notes, study group formation, Kaplan City Campus library membership, assignment and examination management, student liaison and organisation, and others.

**Yuichi Tsuruma**

Durability Engineer, Ford
Bachelor of Engineering (Mechanical Engineering) (Hons)
On campus studies at Royal Melbourne Institute of Technology

"The degree gave me exposure to practical hands-on learning and incorporates employment-related skills. I've also been heavily involved in the RMIT Racing team. We get to design and produce a Formula 1 prototype while learning project management, manufacturing, technical and professional skills. Being part of the team has also given me exposure to industry-standard software such as CATIA, a 3D design software. I have recently started working at Ford as a Durability Engineer."

**Kariza Martin**

Bachelor of Engineering (Aerospace Engineering) (Hons)/Bachelor of Business (Management)
On campus studies at Royal Melbourne Institute of Technology

"Through RMIT, I've been able to take on exciting opportunities, including my internship at Rolls-Royce in Bristol, UK. I've also had opportunities to intern in Australia for Defence, Science and Technology Organisation and QinetiQ. I was able to apply what I had learned at RMIT and extend my skills further. At Rolls Royce, I even had the opportunity to write the technical manual for the engine I worked on, that customers across the UK will be using every day. The work experience support at RMIT is excellent in helping you know what to expect in the workforce and what direction you might want to take your career. RMIT has prepared me for the workforce by helping me become more analytical and confident in approaching problems and develop teamwork skills."
MODULE OUTLINE

Aerospace Engineering

Introduction to Aircraft
This module provides a broad introduction to aircraft by considering a number of topics related to the role, function and operation of flight vehicles. The module introduces the fundamental science underpinning aerodynamics, propulsion and structures. Practical integration issues relating to achieving flight – such as aircraft economics – are also addressed. This includes exploring attributes and limitations relating to the atmosphere and well as examining the anatomy and configuration of aircraft. Other areas of study include stability and control, high-speed flight and emerging technologies. Contemporary issues in aviation are also addressed.

Aerodynamics and Flight Mechanics
This module builds on studies of fluid mechanics, and introduces concepts and application of theoretical aerodynamics and aircraft flight mechanics. The governing equations for aircraft flight mechanics are presented, and used to analyse the flight performance of aircraft in different situations. Analysis of a range of fundamental aerodynamic problems relevant to aircraft is covered using analytical and numerical techniques.

Systems Engineering
This module provides an introduction to the concepts and practice of systems engineering. The concept of complex systems is introduced, and the characterisation and hierarchy of systems is covered. The design process is outlined within a systems engineering framework, and this is considered in the context of the complete system life cycle. The critical role of aspects such as quality, costing, manufacture, regulations and reliability is covered, and their integration within a systems approach is demonstrated. You will gain an understanding of how complex projects, typical in the aerospace and aviation industries, are conceived, developed, executed and managed.

Mechanics and Materials 2
This module further develops your capabilities in mechanics and materials. You will analyse combined shear, axial and bending loads, and design for strength in both tension and compression. Design for deflection will be covered, and various techniques will be used to calculate deflections, including energy methods.

You will examine the underlying assumptions used in mechanics of solids analysis and recognise the environments under which engineering materials do not behave according to these assumptions. Situations of high and low temperatures and loading rates, fatigue loading and loads exceeding the yield strength will be examined.

Dynamics
This module deals with the motion of bodies under the action of single or multiple forces. It covers kinematics and kinetics of particles (rectilinear and curvilinear motions using various coordinate systems, force and acceleration, work and energy, impulse and momentum principles), planar kinematics (using analytical and graphical methods), kinetics of rigid bodies (using force and acceleration, work and energy, and impulse and momentum principles), and vibration of single degree of freedom systems.
Aerospace Dynamics and Control
This module develops and equips you with the fundamental theoretical basis for modelling and control of dynamic systems, with a focus on aerospace systems. On completion of this module, you will be able to develop models describing the behaviour of dynamic systems, critically analyse system stability and response, and design control strategies to achieve desired system behaviour. The theoretical and analytical tools are applied to analyse simple mechanical aerospace systems with multiple degrees of freedom and rigid body dynamics of fixed-wing aircraft. You will also develop theoretical tools to understand basic aircraft stability augmentation and autopilot systems.

Advanced Aerodynamics
This module builds on studies in fluid mechanics and aerodynamics. The module enables you to model aircraft behaviour and performance through a study of wing theory, blade element and propeller theory, longitudinal and lateral stability and control and stability derivatives. Applications are also considered in supersonic and transonic flow.

Aerospace Structures
This module provides an introductory study in the classical theory of aircraft structural analysis. It introduces the important methodologies for analysing stresses in primary aircraft structures including wings and fuselages. An introduction to elasticity theory is presented, which forms a general framework for all analysis work. Buckling of columns, beams and plates is covered, as well as the bending, torsion and shear response of thin-wall beams and stiffened structures. The classical behaviour and performance of aerospace structures is presented, as this is essential for all engineers involved with the initial design and practice associated with aerospace vehicles.

Management of Aerospace Design and Research
The module offers aerospace design and research methodology in different contexts. The determination of a sized design of an aircraft concept is covered. This includes defining requirements, concept evaluation, weight estimation, sizing, configuration, and optimisation. Various design methods are presented, with focus on engineering estimation, dealing with ill-defined design problems, and concept generation and evaluation. Design management aspects are covered, including project management, intellectual property, professional ethics, risk/hazard management, costing, environmental principles and sustainability. Research methods are developed including critical review of appropriate information, data generation and interpretation methods, and communication of research outcomes.

Aerospace Propulsion
The module provides you with an introduction to aerospace propulsion systems, including the following: internal combustion engines driving propellers, ramjets, turbojets and turbofans, rocket engines, and other thrust-producing systems. The module builds on studies of aero-thermodynamics by applying key principles to analyse propulsion system performance. An introduction into fundamental relevant flow processes, in particular heat transfer and combustion, is also included.

Aerospace Finite Element Methods
The module provides an introductory study on the theory of the finite element method for structural analysis. Covered element types include truss, beam, shell and solid elements. Linear static analysis is covered in detail, and an introduction to nonlinear analysis is given. The knowledge and skills developed in this module are essential for all engineers involved with initial to final design of aerospace vehicles. Learning is achieved through classes supported by regular computer-based tutorials/problem-solving classes.

Professional Research Project 1
The module is the first part of a research project that is conducted over two modules. In this first module, “Professional Research Project 1”, you will plan your research project, conduct a critical review of relevant published material and do sufficient work to produce some initial findings.

This project is completed in the companion module “Professional Research Project 2”.

This is a work-integrated project done either in conjunction with industry or in a simulated engineering work environment. You will receive supervision from an internal RMIT supervisor and you may also have an external supervisor (such as an industry-based practitioner). As appropriate to the level of professionalism that is required in this module, you are expected to perform your project work with a high degree of independence and with only limited guidance from staff and/or external industry supervisors.

The “Professional Research Project 1” module includes assessment of the first of two mandatory residentials in Melbourne.

Professional Research Project 2
The module is the second part of a research project that is conducted over two modules. In this second module, “Professional Research Project 2”, you will complete your research project, evaluate information and report your findings.

This is a work-integrated project done either in conjunction with industry or in a simulated engineering work environment. You will receive supervision from an internal RMIT supervisor and you may also have an external supervisor (such as an industry-based practitioner). As appropriate to the level of professionalism that is required in this module, you are expected to perform your project work with a high degree of independence and with only limited guidance from staff and/or external industry supervisors.

The “Professional Research Project 2” module includes assessment of your Engineering Experience and the second of two mandatory residentials in Melbourne. For more information on Engineering Experience, please refer to School of Aerospace, Mechanical and Manufacturing Engineering Student Engineering Experience Guidebook.
MODULE OUTLINE

Aerospace Design Project
This module provides an opportunity to tackle a complex, indeterminate aerospace system design task, with the aim of generating credible, conceptual design solutions. The module is primarily project-based, where you will be working in design teams. A design brief for an aerospace system such as a fixed-wing aircraft, rotorcraft, spacecraft or unmanned aircraft system is provided. The design brief is used to generate a set of requirements. You will then generate, evaluate and select suitable design concepts to meet these requirements.

Airport Planning and Management
The aim of this module is to provide rich information that allows you to gain knowledge of the various facets of airport planning and management. The aim is for you to understand the ‘how and why’ of airports, and the role of the airport managers in the management activities, economics, financing and operating of medium, large, or hub airports. Short case studies and practical exercises oriented to the airport industry will be used to demonstrate particular features. Topics and assignments will also serve to enhance and test the depth of understanding airport planning and management.

Airline Operations
This module provides an overview to airline operations; this includes all operational aspects of staffing and running an airline. You will learn the fundamentals of airline operational strategy. The module examines the various types of airline route structures, in particular hub-and-spoke and point-to-point. Based on airline network strategy fleet planning is also investigated. The airline as a product will be explored including product design and distribution. The importance of fuel on airline operations will be evaluated in terms of its economic impact, and special consideration will be given to fuel conservation. All of these aspects will then be encapsulated in the context of air fare structure and yield management and their importance for airline operations.

Aircraft Maintainability and Maintenance
This module prepares you to work in the management of airline maintenance by providing an understanding of the technical issues that underpin the maintenance procedures issue by airframe OEMs. In addition you will discuss risk factors in maintenance with a focus on Maintenance Human Factors.
Further Thermo-Fluid Mechanics

This is the third part of a three-part series of core modules (Applied Thermodynamics, Fluid Mechanics of Mechanical Systems, and Further Thermo-fluid Mechanics) designed to provide core knowledge of the fundamental principles and engineering applications of thermodynamics, heat transfer and fluid mechanics. These three areas collectively make up the field of Thermo-Fluid Mechanics or Thermal Fluid Sciences but are traditionally taught as separate modules. However, in this module, the three areas are presented in a more integrated manner, emphasising the connectivity between these areas in theoretical treatment and through the use of practical or real-world examples of thermal fluid systems.

The fundamentals and principles of thermal fluid mechanics will be reviewed through the use of the real-world examples and be advanced to analyse the practical thermo-fluid systems for engineering design applications. Collectively, they should provide you with a sound fundamental as well as a practical knowledge of this area of engineering.

Renewable Energy Systems

The use of renewable energy for power generation and heating is growing rapidly, the main drivers being environmental concerns, security of energy supplies and the need to supply electricity in off-grid areas.

In this module, you will learn about the operation and performance of three renewable energy technologies: grid-connected wind turbines; photovoltaic systems; and solar hot water systems.

The emphasis will be on the sizing, selection and evaluation of renewable energy equipment for given applications.

Mechanics of Machines 1

Mechanics of Machines 1 is the first in a series of two modules of Mechanics of Machines. This module mainly deals with the state of rest or motion of bodies under the action of a single or multiple forces. Therefore, this module deals with Newton’s Second Law of motion which is considered as a foundation for the design and analysis of various structural, mechanical and electrical devices found in a wide range of engineering applications.

The Mechanics of Machines 1 module will cover kinematics and kinetics of particles and rigid bodies using force and acceleration, work and energy, and impulse and momentum principles.

Mechanics of Fluids and Solids 2

The solids part of this module deals with analytical techniques for the solution of linear elastic stress and strain problems, including displacement of beams and analysis of simple indeterminately supported structures.

The content of the fluids part of this module includes: review of equations for conservation of energy and linear and angular momentum for steady-flow systems; dimensional analysis; review of pipe flows; turbo-machinery (incorporation into pipe systems, dimensionless parameters, model testing, specific speed, velocity triangles); Introduction to aerodynamic drag and lift; and introduction to compressible gas flows.

*** Modules will be renamed with effect from 1 November 2015.
MODULE OUTLINE

Dynamics and Control***
This module deals with the study of vibration in mechanical systems. The study of vibration is concerned with the oscillatory motions of bodies and the forces associated with them. This module also aims to provide you with an understanding of the nature and behaviour of engineering processes, machines and systems whose operating states vary with time. This module is also concerned with controlling that state.

Solid Mechanics 3
This module is designed to expand your knowledge in the field of non-linear mechanics of solids and its application to structural analysis, machine design and material processing. Through this module you will be able to understand the influence of non-linearities on the behaviour of structures. The module aims to equip you with essential analytical skills which have a particular bearing on your professional practice as mechanical engineers. On completion of this module you should have sufficient knowledge of the mechanics of solids to enable you to solve advanced practical problems.

Mechanical Design 2
This module is part of a sequence of design modules. It combines theoretical approaches to aspects of stress analysis with practical application of this knowledge in a design project situation. The module also aims to give practice in this design project situation, in the use of knowledge gained from a wide range of other modules previously or concurrently studied. The work on the particular system that will be studied (a compressed air supply system for a factory) involves assessing demand patterns, determining required compressor delivery capacity and system storage capacity, assessing waste heat recovery potential, designing a pipe system, designing the air storage pressure vessel, and sizing over pressure and over temperature relief devices for the vessel. Learning is problem-based for the project duration.

Applied Heat and Mass Transfer
This module is a final year module building on earlier core thermo-fluid modules.
Within this module the following topics will be dealt with, chiefly in the context of refrigeration and air conditioning applications:
• Revision of basic modes of heat transfer, vapour compression refrigeration cycle,
• The role of heat exchangers in a thermodynamic cycle and associated environmental and economic issues;
• Boiling and Condensation;
• Fouling of heat exchangers; Overall heat transfer coefficient; Log mean temperature difference; Parallel flow, counter flow and cross flow configurations of heat exchangers;
• Heat exchanger effectiveness and number of transfer module (NTU); Pressure drop and flow considerations;
• Common heat exchanger constructional arrangements; Fins, Insulation;
• Wetted surface heat and mass transfer including evaporative cooling and cooling towers;
• The human body and occupied building as heat exchangers (air conditioning heating & cooling loads).

Mechanics of Machines 2***
This module introduces you to more advanced concepts of kinematic and dynamic modelling and analysis of mechanisms and machines, including linkage mechanisms and cam mechanisms, reciprocating and rotating machinery. In addition, the module also provides an introduction to vibration analysis and condition monitoring of machinery with particular reference to predictive maintenance. The module enables you to explore in depth core mechanical engineering concepts by integrating and applying contemporary analytical, computational and experimental methods. It relates kinematics and dynamics of mechanisms and machines to their design and allows you to relate theory and practice using a problem-based approach in which you develop project management skills.

Advanced Engineering Control***
This module deals with the application of control theory in general engineering applications including robots. Analysis of automatic control systems using frequency response and root locus techniques are discussed and applied to control systems including robot sensing devices.

Finite Element Analysis
The module introduces you to theoretical basics and practical application of the finite element method as well as to related numerical modelling techniques. It is designed to enable you to solve practical problems related to solid mechanics, machines and structures. This module provides a necessary tool for the analysis and solution of practical structures and processes.

*** Modules will be renamed with effect from 1 November 2015.
Management of Mechanical Design and Research
In this module you will actively explore contemporary issues and practices relating to the management of engineering design and research projects and product design in particular in a wide range of industrial settings.

In conjunction with this, you will be encouraged to explore in-depth and apply in integrated engineering design and or research contexts broader issues including critical review of appropriate information, relevant aspects of intellectual property, professional ethics, risk/hazard management, costing, project management, environmental principles and sustainability in general.

Contextual studies involving feasibility and value analysis will be used to provide you, working in a team, with an opportunity to explore real-world problems relating to product design and development.

Professional Research Project 1
The module is the first part of a research project that is conducted over two modules. In this first module, “Professional Research Project 1”, you will plan your research project, conduct a critical review of relevant published material and do sufficient work to produce some initial findings. This project is completed in the companion module “Professional Research Project 2”.

This is a work-integrated project done either in conjunction with industry or in a simulated engineering work environment. You will receive supervision from an internal RMIT supervisor and you may also have an external supervisor (such as an industry-based practitioner). As appropriate to the level of professionalism that is required in this module, you are expected to perform your project work with a high degree of independence and with only limited guidance from staff and/or external industry supervisors.

The “Professional Research Project 1” module includes assessment of the first of two mandatory residentials in Melbourne.

Professional Research Project 2
The module is the second part of a research project that is conducted over two modules. In this second module, “Professional Research Project 2”, you will complete your research project, evaluate information and report your findings.

This is a work-integrated project done either in conjunction with industry or in a simulated engineering work environment. You will receive supervision from an internal RMIT supervisor and you may also have an external supervisor (such as an industry-based practitioner). As appropriate to the level of professionalism that is required in this module, you are expected to perform your project work with a high degree of independence and with only limited guidance from staff and/or external industry supervisors.

The “Professional Research Project 2” module includes assessment of your Engineering Experience and the second of two mandatory residentials in Melbourne. For more information on Engineering Experience, please refer to School of Aerospace, Mechanical and Manufacturing Engineering Student Engineering Experience Guidebook.
Graduation & Recognition

Students will be considered as being eligible for the award when they have satisfactorily completed all academic requirements of the programme as detailed in the programme structure. To receive their award at a graduation ceremony or in absentia, students will need to submit an application to graduate.

A degree conferral ceremony is held in August or September each year in Singapore. Degrees are conferred by the Chancellor of RMIT University or his/her representative.

Upon successful completion of the Bachelor degrees, graduates will be eligible for membership of the RMIT University Alumni. For more information visit www.alumni.rmit.edu.au

Entry Requirements & Application

The selection of prospective students for the programme is competitive. The academic entry requirement for the programme is successful completion of a related three-year Polytechnic Diploma or an Advanced Diploma in aerospace or closely related engineering qualification approved by RMIT, with an average grade of 2.00 out of 4.00 or above. However, applicants who have a GPA less than 2.0 and also a minimum of two years' relevant work experience will also be considered.

For each intake, students apply for the programme through Kaplan, Singapore. Other qualifications offered by non-Singapore based Diplomas will be assessed on a case-by-case basis by RMIT. This will include English language requirements where the approved qualification was offered in a language other than English.

For more information on RMIT’s English entry requirements, see the English equivalents web page: www.rmit.edu.au/students/gradingbasis/gpa

English Language Requirements

As per RMIT’s “English language requirements and equivalency information”, applicants who have not achieved a minimum of C6 in English or Literature in English at O-Levels in Singapore, or a minimum of C in General Paper or a H2 or H3 subject (excludes languages other than English, Mathematics, Art [H2] and Music) at A-Levels in Singapore must provide evidence of at least ONE of the following:

- IELTS - 6.5 (no band less than 6.0);
- TOEFL - Paper-Based = 580 (TWE 4.5);
- TOEFL - internet-Based Test (iBT) = Overall score of 92, with minimum of 20 in all sections;
- Pearson Test of English (Academic) (PTE(A) = 58 (no band less than 50);
- Cambridge English: Advanced (CAE) = CAE Grade B (no band less than Good); or,
- Successful completion, where English is the language of teaching and assessment, of either:
  - at least the equivalent of one year of a university degree within the past two years; or
  - at least the equivalent of a two year tertiary programme of at least AQF Level 5 within the past five years.

Applicants with other equivalent qualifications may be considered on a case-by-case basis with final approval at the discretion of the Pro-Vice Chancellor or nominee of the RMIT College of which the applicant is applying.
Fee Schedule

Please refer to the insert for the information on:
- Tuition Fee
- Non-tuition Fee
- Refund Policy

For more information, please contact our programme consultant or email info.sg@kaplan.com

Fee Protection Scheme (FPS)

Under the fee protection scheme, Kaplan Higher Education Institute has put in place an insurance arrangement that ensures fees paid by students to the School are insured by Lonpac Insurance Bhd, a Council for Private Education (CPE) appointed service provider. The insurance protection serves to protect the students’ fees in the event a Private Education Institution (PEI) is unable to continue operations due to insolvency and/or regulatory closure. Furthermore, the FPS protects the student if the PEI fails to pay penalties or return fees to the student arising from judgement made against it by the Singapore courts. The FPS is compulsory for all local and international students taking modules at PEIs seeking EduTrust certification. FPS applies to all modules with a duration of more than 1 month or 50 hours. Students enrolled in these modules will be required to pay a fee for FPS which varies depending on the fees of the modules insured.

Standard Student Contract

It is a mandatory requirement by the CPE that all students, both local and international, sign the student contract with Kaplan Higher Education Institute upon acceptance of the offer made by Kaplan Higher Education Institute during the admission process (note: Student contract will not be required for non-award programmes with a duration of less than 50 hours or 1 month). The student contract serves to minimise future disputes and hence, has to be completely understood by students prior to making module fee payments.

Please refer to CPE website (www.cpe.gov.sg) for details on EduTrust, fee protection scheme and standard PEI-student contract.

Closing Dates

Deadlines for applications for the intakes each term are contained in the application forms. It is advisable for potential students to apply for admission at least 8 weeks before the start of each intake in May and September each year.

Study Loans*

Study loans are available with most banks and financial institutions. Interested candidates may contact:
- Maybank : 1800 629 2265 www.maybank.com.sg
- OCBC Bank : 6586 7403 www.ocbc.com.sg

*Only applicable for local students.

Who to Contact

For enquiries on this module, send “KAP-4CCE” via sms to 9677 7598 or enter it at http://ask.kaplan.com.sg

By sending the code via sms or website, you have given your consent to have a representative from Kaplan contact you regarding your request.

For other information on RMIT University’s programmes, please contact:
- Telephone : 6733 1877
- Facsimile : 6225 3605
- Email : info.sg@kaplan.com
- Kaplan Website : www.kaplan.com.sg
- RMIT Website : www.rmit.edu.au

The full application package should be sent to:
Director, RMIT, BEng Programme (Part-time)
Kaplan Higher Education Institute
Kaplan City Campus @ Wilkie Edge
8 Wilkie Road, #02-01, Singapore 228095

RMIT and Kaplan Higher Education Institute reserve the right to alter, amend or delete any programme fee, course, admission requirement, mode of delivery or other arrangements without prior notice.

The information contained in this brochure is correct at time of printing (July 2015).

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