COURSE SPECIFICATION

Course Aim and Title	MEng Mechanical and Industrial Engineering (Integrated Master's)
Intermediate Awards Available	BEng(Hons), Dip HE, Cert HE
Teaching Institution(s)	UEL
Alternative Teaching Institutions (for local arrangements see the final section of this specification)	MAHSA University, Malaysia
UEL Academic School	Architecture, Computing and Engineering
UCAS Code	
Professional Body Accreditation	
Relevant QAA Benchmark Statements	Engineering 2015
Additional Versions of this Course	
Date Specification Last Updated	March 2019

Course Aims and Learning Outcomes

The MEng in Mechanical and Industrial Engineering (Integrated Master's) is a 4-year course. It is designed to give students a deep understanding and the skills essential for the Mechanical industry, especially the design and industrial technologies.

Mechanical Engineers play an important role in the future development of industry-standard skills for modern sustainable milieu. Engineers have high skill sets of logical thinking and critical analysis, enabling them to think and react professionally and are ready for any future challenges. The course promotes student-centred learning, problem-based learning, and hands-on training which will help the students develop critical thinking ability and problem-solving skills.

This course is designed to provide the opportunity to learn in the following areas:

Knowledge

- Acquire the knowledge and skills relevant to a career as a professional engineering practitioner who can work effectively with current and future industrial technologies, methods and standards.
- *Engineering Knowledge* - Apply knowledge of mathematics, science, engineering fundamentals and an engineering specialisation to the solution of complex engineering problems
- Gain the knowledge and skills required to perform a variety of professional roles within engineering design, management, industry, and associated specialist fields.

Thinking Skills

- *Investigation* - Conduct investigation into complex problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions;
- *Problem Analysis* - Identify, formulate, and research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences;

Practical Skills

- Enhance your understanding of innovative and pioneering approaches in the engineering field and be able to apply them to the solution of real-world problems to develop new industry-relevant solutions.
- *Design/Development of Solutions* - Design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations;
- *Modern Tool Usage* - Create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering activities, with an understanding of the limitations;

Skills for Life and Work

- Prepare for progression in career and educational development to pursue postgraduate studies.
- Be able to develop and demonstrate a range of subject-specific and transferable skills, including team-working, leadership, entrepreneurship, management and planning.
- *The Engineer and Society* - Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice;
- *Environment and Sustainability* - Understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development;
- *Ethics* - Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice;
- *Communication* - Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions;
- *Individual and Team Work* - Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings;
- *Life-Long Learning* - Recognise the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change;
- *Project Management and Finance* - Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

MAHSA University provides a well-structured course in collaboration with various industries and academia. The curriculum provides the necessary industrial and technological skills with the capability to apply relevant engineering skills with strong critical thinking, analysis and teamwork.

CAREER PROSPECT

MEng in Mechanical and Industrial Engineering(Integrated Master's) graduates may involve in positions such as:

- Industrial engineers
- Production engineers
- Hydraulic and fluid engineers
- Finite element specialist engineers
- Environmental engineers
- Design Engineer
- Project manager

Mechanical and Industrial Engineering includes designing, building, supervising, operating and maintaining industrial and automating projects and systems in the public and private sector, including machines, aircraft, turbines, transport logistics machinery, pumps, rail engines, power supply systems, buildings maintenance equipment and even nuclear power plants.

With a work-based learning module embedded within the course, you'll also have the chance to develop your skills in the workplace and enhance your CV. You also have the unique opportunity of getting professional certifications from Microsoft and EC council while studying at MAHSA.

The course promotes student-centred learning, problem-based learning, and hands-on training which will help the students develop critical thinking and problem-solving skills.

To complement the theory and practical study, MAHSA has incorporated a well-structured internship course in collaboration with various engineering and industrial corporations into the curriculum. The curriculum provides the necessary industry application of technological skills with the capability to apply relevant engineering skills with strong critical thinking, analysis and teamwork.

Learning and Teaching

Knowledge is developed through

- attending lectures/guest presentations
- engaging with formative tutorial work
- actively participating in design and project work
- guided-reading
- knowledge-based activities with feedback
- online-discussions and activities
- attending lectures/seminars through guest speakers from the professional institutions

Thinking skills are developed through

- analytical assessment of data
- solving tutorial problems
- critical assessment of information
- problem-solving practical applications
- research projects
- reflective activities with feedback
- tutorial activities & discussions
- online discussions and activities

Practical skills are developed through

- drawing and design
- laboratory and experimental work
- field courses and site visits
- applying technical regulations to given scenarios
- application to real-life and simulated case studies
- IT activities with feedback
- research skills-based activities with feedback
- seminar preparation and presentations

Skills for life and work (general skills) are developed through

- interactive communication exercises
- individual and group work sessions
- the demands of the study medium
- planning activities with feedback
- project and teamwork
- using specialist software

Assessment

Knowledge is assessed by
- time-constrained examinations
- laboratory and fieldwork exercises
- assignments, design and project work

Thinking skills are assessed by
- approach to solving problems
- analysis of alternative solutions
- practical solutions to complex tasks

Practical skills are assessed by
- laboratory reports and experimental assessment
- group survey work
- application to practical problem-solving

Skills for life and work (general skills) are assessed by
- oral presentations
- written communication exercises
- drawing, sketching and design work
- team project work
- use of specialist software

Students with disabilities and/or particular learning needs should discuss assessments with the Course Leader to ensure they can fully engage with all assessments within the course.

Work or Study Placements

Students, who have come directly to the MEng in Mechanical and Industrial Engineering course, can undertake an Industrial training between the second and third year of study. Alternatively, some arrange work experience over the summer.

Course Structure

All courses are credit-rated to help you to understand the amount and level of study that is needed.

One credit is equal to 10 hours of directed study time (this includes everything you do e.g. lecture, seminar and private study).

Credits are assigned to one of 5 levels:

3: Equivalent in standard to GCE 'A' level and is intended to prepare students for year one of an undergraduate degree course.
4: Equivalent in standard to the first year of a full-time undergraduate degree course.
5: Equivalent in standard to the second year of a full-time undergraduate degree course.
6: Equivalent in standard to the third year of a full-time undergraduate degree course.
7: Equivalent in standard to a Master's degree.

Courses are made up of modules that are each credit weighted.

The module structure of this course:

Level	Module Code	Module Title	Credit Weighting	Core/ Specialisation	Available distance learning Y/N
4	UEME 41	Engineering Statistics & Numerical Methods	20	Core	N
4	UEME 42	Fluid Mechanics & Dynamics	20	Core	N
4	UEME 43	Entrepreneurship	20	Core	N
4	UEME 44	Engineering Drawing & Experimentation	20	Core	N
4	UEME 45	Thermodynamics and Manufacturing Processes	20	Core	N
4	UEME 46	Solid Mechanics and Mechanical Design Process	20	Core	N

Level	Module Code	Module Title	Credit Weighting	Core/ Specialisation	Available distance learning Y/N
5	UEME 51	Multimedia Application and Creative Innovation	20	Core	N
5	UEME 52	Engineering Experimentation and Industrial Training	20	Core	N
5	UEME 53	Solid & Fluid Mechanics	20	Core	N
5	UEME 54	Measurements and Instrumentation/ Mechanic of Machine and Vibration	20	Core	N
5	UEME 55	Engineering Electronics & Microprocessors & Component Design	20	Core	N
5	UEME 56	Thermodynamics and Control Engineering	20	Core	N
6	UEME 61	UG Thesis	40	Core	N
6	UEME 62	Industrial Engineering and System Design	20	Core	N
6	UEME 63	Engineers in Society and Engineering Management, Economics & Safety	20	Core	N
6	UEME 64	Vibration, Measurement & Control and Acoustic and Noise Control	20	*Specialisation*	N
6	UEME 65	Material Processing and Material Selection	20	*Specialisation*	N
6	UEME 66	Nanomaterials and Robotics	20	*Specialisation*	N
6	UEME 67	Production Planning & Control and Refrigeration & Air-Conditioning	20	*Specialisation*	N
7	UEME71	Technology & Management skills for IR 4.0	30	Core	N
7	UEME72	Applied Research and Engineering Practice	30	Core	N
7	UEME73	Advanced Computational Fluid Dynamics	30	*Specialisation*	N
7	UEME74	Industrial Automation and Robotics	30	*Specialisation*	N
7	UEME75	Smart Industries & Digital Manufacturing	30	*Specialisation*	N
7	UEME76	Intelligent Transport Systems	30	*Specialisation*	N

Please note: Specialisation modules might not run every year, the course team will decide on an annual basis which specialisations will be running, based on student demand and academic factors, in order to create the best learning experience.

For example: the specialisation modules are offered to students based on their area of interest during the reenrollment, subject to having one fourth of the total number registered.

Additional detail about the course module structure:

Part-time day release students would normally study 60 credits per academic year and follow the same structure as noted for full-time study.

A core module for a course is a module which a student must have passed (i.e. been awarded credit) in order to achieve the relevant named award. An specialisation module for a course is a module selected from a range of modules available on the course.

The overall credit-rating of this course is 480 credits for the MEng (Integrated). If, for any reason, you are unable to achieve this credit, you may be entitled to an intermediate award; the level of the award will depend on the amount of credit you have accumulated. You can read the University Student Policies and Regulations on the UEL website.

Typical Duration

It is possible to move from full-time to part-time study and vice-versa to accommodate any external factors such as financial constraints or domestic commitments. Many of our students make use of this flexibility and this may impact on the overall duration of their study period.

The expected duration of this course is 4 years full-time or 7 years part-time.

A student cannot normally continue study on a course after 5 years of study in full time mode unless exceptional circumstances apply and extenuation has been granted. The limit for completion of a course in part time mode is 8 years from first enrolment.

Course Specific Regulations

This course can provide the underpinning educational base for the ‘Mechanical Engineering’ Degree apprenticeship.

This course in Malaysia does not currently have professional body accreditation but students are strongly encouraged to make individual applications for membership at professional institutions.

The School hosts a regular course of site visits open to all students on various Production/Industrial/ Engineering/Manufacturing corporations. Students will benefit from visiting some of the most prestigious corporates in Malaysia.

Further Information

More information about this course is available from:

- The MAHSA University (www.mahsa.edu.my)
- The Course Handbook
- Module study guides
- Course information (https://mahsa.edu.my/faculties/Engineering/bachelor-mechanical-engineering.php)
- The UEL web site (www.uel.ac.uk)
- UEL Manual of General Regulations (available on the UEL website)
- UEL Quality Manual (available on the UEL website)
- School web pages

All UEL courses are subject to thorough course approval procedures before we allow them to commence. We also constantly monitor, review and enhance our courses by listening to student and employer views and the views of external examiners and advisors.

Additional costs:

Occasional additional costs may incur in field trips or specialist equipment that you may wish to purchase for group projects.

Alternative Locations of Delivery

There is no alternate locations. This course will run only at Saujana Putra Campus, Kuala Lumpur, Malaysia.