FACULTY OF ENGINEERING AND TECHNOLOGY (FET)

BEng (Hons) Mechanical
A four-year course.

Started in the year 2000, and was accredited for the first time in November 2003.

Programme Objectives:
• Graduates who hold managerial or senior positions within their organizations
• Graduates who demonstrate professionalism and a commitment to continual professional development
• Graduates who are employed in engineering or related professions, or are enrolled in (or have graduated from) engineering or professional graduate school
# Programme Outcomes

**Engineering Knowledge**

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<th>PO1</th>
<th>Acquire and apply knowledge of mathematics, science and engineering fundamentals</th>
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<td>PO2</td>
<td>Acquire technical competence in specialised areas of engineering discipline to solve complex engineering problems</td>
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**Problem Analysis**

| PO3 | Identify and analyse complex engineering problems, and formulate solutions based on fundamental principles of science and engineering |

**Design/Development of Solutions**

| PO4 | Design solutions for complex engineering problems that meet specified needs with relevant considerations of their impacts in society |

**Investigation**

| PO5 | Conduct investigation and research on complex engineering problems in the chosen field of study |

**Modern Tool Usage**

| PO6 | Create, select and apply appropriate techniques, resources, and modern engineering and IT tools to complex engineering activities |

**The Engineer and Society**

| PO7 | Demonstrate awareness of societal, safety and health, legal, and cultural issues relevant to professional engineering practice |
## Programme Outcomes

### Environment and Sustainability

| PO8 | Understand the importance of sustainability and cost-effectiveness in design and development of professional engineering solutions, and their impacts in societal and environmental contexts |

### Ethics

| PO9 | Apply and commit to professional ethics and responsibilities of engineering practice |

### Communication

| PO10 | Communicate effectively in both oral and written contexts |

### Individual and Team Work

| PO11 | Function effectively as an individual, and as a member or leader in a team |

### Life-long Learning

| PO12 | Recognise the need for, and acquire the ability to engage in self-improvement through continuous professional development and life-long learning |

### Project Management and Finance

| PO13 | Demonstrate management, leadership and entrepreneurial skills, and apply these to one's own work, as a member and leader in a team, to manage projects in multidisciplinary environments |
Mechanical engineering is an engineering field that concerns the principles of physics and materials science for analysis, design, manufacturing, and maintenance of various mechanical systems.

Mechanical engineering involves the production and usage of mechanical power and heat for the design, production, and operation of machines and tools.

This field requires a strong understanding of core concepts including mechanics, kinematics, thermodynamics, fluid mechanics, materials science, structural analysis, and energy.
Where Do Mechanical Engineers Work?

- Manufacturing Sector (Systems, Plants and Products)
- Automotive Industry and Assembly Firms
- Aerospace and Defense
- Industrial Systems and Processing (Refineries, Mines, etc.)
- Utility Systems and Infrastructure Delivering Industry (Water, Oil and Power)
- Consulting Firms
- Emerging Fields (Robotics, Biomedical Engineering, Nanotechnology, etc.)
- Engineering and Product Development Firms
Where Do Mechanical Engineers Work?

Median Salary by Industry (Malaysia) 2013

- Oil & Gas (97) - RM 46,661
- Engineering Services (47) - RM 38,182
- Oil and Gas Field Services (23) - RM 52,699
- Construction (14) - RM 58,200
- Manufacturing (13) - RM 39,100
- Electrical Equipment, Appliance, and Component Manufacturing (8) - RM 33,033
- Steel Manufacturing (6) - RM 31,089

Currency: MYR | Updated: 19 Feb 2013 | Individuals Reporting: 309

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What Would You Study?

- Engineering Mathematics
- Mechanics
- Fluid Mechanics
- Thermal Sciences
- Material Science
- Engineering Design
- Theory of Machines and Mechanisms
- Control Theory
- Industrial and Systems Sciences
- Non-traditional Subjects – Multimedia Technology and Cyberpreneurship
- Laboratories
- Industrial Training
Characteristics of A Mechanical Engineer

- Able to think in **mathematical** and **abstract** terms
- Able to work well **independently** and as part of a **team**
- **Practical** and excellent at **problem-solving**
- Have an interest in **technical** processes
- **Persistence** and **determination**
- **Organized**
- Good oral and written **communication skills**
- Good **interpersonal skills**
1.0 Student Competitions

i. INFINEON-MMU TECHNICAL SYMPOSIUM 2012
   - Title: Advances in Semiconductor Packaging & Test Technology
   - Date: 9 April 2012
   - Venue: Corporate Communications Units (CCU), MMU Malacca Campus
ii. SHELL-ECO MARATHON ASIA 2012 (MMU GRÜNE WELD)

- Date: 4 – 7 July 2012
- Venue: Sepang International Circuit (SIC)
About The Race

- The **Shell Eco-marathon (SEM)** challenges teams of science, engineering and technology students around the world to design, build and drive the most **fuel-efficient** vehicle possible.

- The programme culminates in **3 days** of competition at different locations in the **Americas**, **Europe** and **Asia**. Shell Eco-marathon is about **distance**, not speed.
About The Race (cont..)

- MMU Team (Grüne Welt) - 9 supervisors and 20 engineering students.
- Result – Ranked at 7th out of 36 registered teams in Asia and 2nd out of 7 Malaysian teams.
- Specifications of Eco-V2:
  - Chassis – Honeycomb structure, polyester (PE) & carboxymethyl cellulose (CMC)
  - Shell – Polyester (PE), newspaper, fiber glass and polycarbonate
  - Wheels - SKF Energy Efficient Series bearings
  - Tires – Low rolling resistance tires (Michellin)

Snapshots During Fabrication
iii. PRESENT AROUND THE WORLD (PATW) COMPETITION
- Date: 21 July 2012
- Candidate: Amares Singh Gill a/l Segar Singh
- Achievement: Top 20

iv. FORMULA VARSITY COMPETITION
- Date: 12 – 14 October 2012
- Venue: Melaka International Motorsports Circuit
About Formula Varsity Competition 2012

- MMU was presented by a team from FET called **MMU Gondoos** which participated in **static** and **dynamic** events.

- For the **static** event criteria tested are performance of the car during **acceleration** and **braking point**.

- The **dynamic** event was the actual racing event which the car needs to complete **25 laps** with the fastest time.
Multidisciplinary Student Competitions & Activities

Team’s photo of FET’s Formula Varsity Competition 2012
2.0 Industrial Visit

i. Company: AUO Sunpower Sdn Bhd
   - Date: 1 November 2011

ii. Company: Automotive Lighting (AL)
    - Date: 10 December 2011

iii. Company: Asemo Green Wash Sdn Bhd
     - Date: 12 December 2011
iv. **Company:** Contraves Advanced Sdn Bhd  
   - *Date:* 13 December 2011

v. **Company:** C.K. Hardware & Timber Sdn Bhd  
   - *Date:* 18 December 2011

vi. **Company:** Chernyen Industries Sdn Bhd  
   - *Date:* 19 December 2011

vii. **Company:** Impressive Edge Group Sdn Bhd  
    - *Date:* 22 December 2011
3.0 Industrial Talks

i. STATISTICAL PROCESS CONTROL
   - **Speaker** – Mr. Woon Mun Keat (Statistical Design Specialist, Infineon Technologies, Melaka)
   - **Content** – Elements of A Control System, Central Limit Theorem, Ten Requirements for Designing Effective Process Controls, Process Capability

ii. LEAN SIX SIGMA & DEPLOYMENT
   - **Speaker** – Mr. Mok Fock Lin (Industrial Engineering Specialist, Infineon Technologies, Melaka)

iii. SEMICONDUCTOR FAILURE ANALYSIS FLOW
   - **Speaker** – Ms. Tan Yik Yee (Senior Staff Engineer, Infineon)
   - **Content** – Non Destructive Test (optical, xray, SAM, IR-LIT, baking), Destructive Test (Decapsulation, cross section, probing, EMMI), Imaging (SEM/EDX, FIB, TEM), Advanced FA techniques (Auger, XPS, TOSFIMS and etc.)
Industrial Talk on Semiconductor Failure Analysis Flow by Ms. Tan Yik Yee from Infineon
iv. CAREER OPPORTUNITIES IN GENTING PLANTATIONS BERHAD

- Speaker – Mr. Choo Huan Boon (Senior Vice President - Group Processing, Genting Plantations Berhad)

v. QUALITY MANAGEMENT – TOWARDS ZERO DEFECT

- Speaker – Mr. Kit KwongToon (Director, Quality Management, Infineon Technologies, Melaka)
- Content – Quality Function, Process of Quality, Quality Evolution to Zero Defect
Objectives

- To expose students to the techniques and skills involved in project planning, design, implementation, and management.

- To enable students to acquire hands-on experience in fields related to their major of study so that they are able to relate and reinforce what has been taught in the class.
Example 1: Design and Fabrication of The Small-Scaled Pulsejet Engine
Example 2: Design and Development of A Small Scale Turbojet Engine
Example 3: Design and Fabrication of Small-Scaled Axial Flow Pump
Example 4: Design and Fabrication of Small-Scaled Centrifugal Pump
Summary

- Mechanical engineering is one of the most popular programmes in MMU Melaka.
- Mechanical engineering is the most broad-based branch of engineering.
- It is considered as jack-of-all trades among the engineering fields.
- Studying mechanical engineering can be fun and exciting!