SEMM 1921

Lecture 1

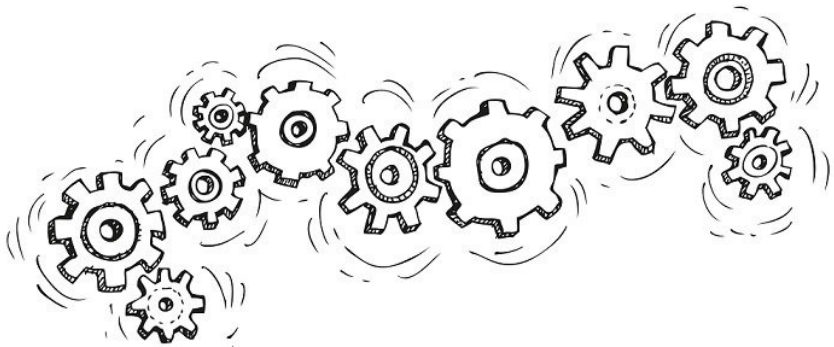
THE MECHANICAL ENGINEERING PROFESSION

Learning Outcome

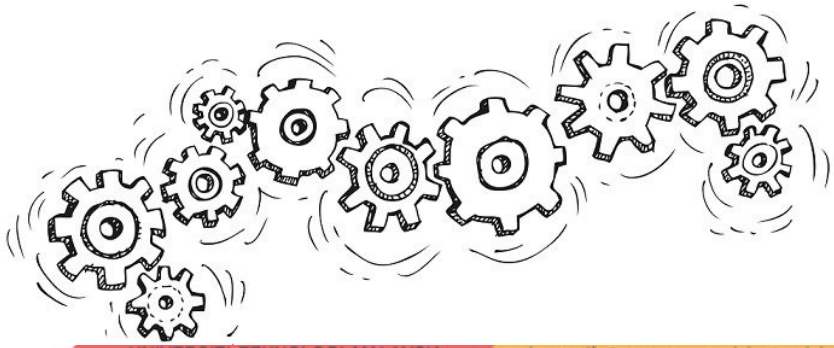
At the end of this chapter, students should be able to describe the characteristics of the mechanical engineering profession

CONTENTS

- Introduction
- Transition to University
- The Mechanical Engineering Profession
- The Board of Engineers Malaysia (BEM)



INTRODUCTION




SELAMAT DATANG KE UTM
WELCOME TO UTM
KERANA TUHAN UNTUK MANUSIA
UNIVERSITI TEKNOLOGI MALAYSIA

Brief History of UTM

01

Treacher Technical School -1904

The history of UTM began in 1904 when a technical school began operation on Weld Road. In 1941 the Advisory Committee of Technical Schools recommended that the school be elevated to college status and proposed that a new technical college be constructed.

02

The Technical College

The Technical College was eventually completed and was officially opened on March 1, 1955, diploma courses upgraded to degree level in 1960.

03

Technical Institute

A committee, formed by the Ministry of Education in early 1971 recommended the formation of a technological University using Bahasa Melayu. On March 14, 1972, Malaysia's Supreme Ruler, DYMM Seri Paduka Baginda Yang Dipertuan Agong officially proclaimed the formation of Institut Teknologi Kebangsaan (ITK).

04

Finally a University

On 1 April 1975, the journey from school to university was completed when the institution became Universiti Teknologi Malaysia (UTM). In 1976, the government approved the university constitution and the university Senate and Council were established. The university moved to a new campus located on 2,400 acres of land in Skudai, Johor. Construction works had begun in 1978 and the campus opened on September 16, 1985

05

Full autonomy and Synergy

On 8 January 2012, the Malaysian Ministry of Higher Education declared UTM to be the first Malaysian university to attain full autonomy from the government. In 2018, Universiti Teknologi Malaysia (UTM) has embarked on a unique history when undertaking the restructuring of its academic entity and witnessing the merger of faculty from 18 to seven.

Credit to: Priyansh Gupta (A17KM0517)

Transition to University

It is very important to understand and appreciate the differences between life in schools/matriculation colleges and the university

It is essential to adapt quickly to the new environment

Life in School

Boarding Schools
- Fixed schedule (e.g. prep hours & lights-off)
- Wardens monitor your activities

Non-Boarding Schools
- Tuition classes
- Parent/family/guardian monitors your activities

Life in the University

Being independent

- Self-management of time, material & money
- Self-monitoring and self-assessment of academic progress & achievement

Making informed decisions

- Taking control in making decisions & accomplishing goals with some support from Academic advisor and lecturers
- Academic advisor's role is as a facilitator and referral agent

Life in the University

Teaching & learning methods

- Outcome based education (OBE) approaches
  - Active learning
  - Cooperative learning – working in groups
  - Case studies
  - Demonstration/laboratory/studio
  - Project/problem based learning

Life in the University

Teaching & learning methods

- No ‘spoon-feeding’
  - Lecture notes, if any, provided by lecturers are very basic
  - Use the library & other resources
  - You’re expected to search for additional information and do further exploration on the topics discussed
- Do not rely on memorization alone but instead develop
  - A good understanding of basic concepts
  - Ability to apply basic concepts in solving problems
  - Ability to explain & discuss basic concepts with your peers

Develop Good Habits

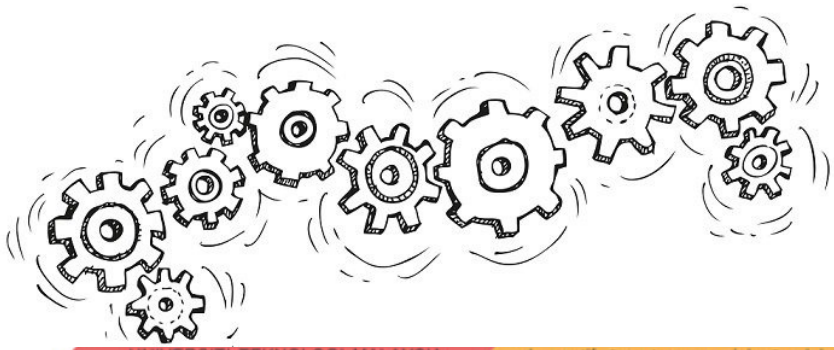
Good health habits

- Adequate sleep & rest
- Balanced diet
- Exercise

Get organized

- Develop a regular study schedule
- Organize course materials
- Utilize the My ePortfolio@UTM
- Complete assignments in a timely manner

THE MECHANICAL ENGINEERING PROFESSION



What is Mechanical Engineering ?

- The word 'Engineering' is derived from the Latin Root '*Ingeniere*', meaning to design or to devise, which also forms the basis of the word “Ingenious”
- The term 'Mechanical Engineering' originated in the 19th century
- During the 19th century, the steam engines played a very important role with applications not only in transportation but also in the industry
- By the 20th Century, mechanical engineering has become broader, embracing internal combustion engine, drive mechanism, machine tools, air-conditioning plants and refrigeration systems

What is Mechanical Engineering ?

- The field of Mechanical Engineering deals with forces, materials, energy, fluids, motion and design
- Mechanical Engineers apply their knowledge of these elements to devise products and solve problems
- Scientist normally emphasize the discovery of physical laws rather than apply those phenomena to develop new products whilst engineers apply their knowledge of mathematics, science, and materials to develop new and better technologies

What is Mechanical Engineering ?

- For accredited engineering programs in Malaysia, the Board of Engineers Malaysia specifies that the following are core areas for Mechanical engineering (Engineering Accreditation Council, Programme Accreditation Standard 2020):

CORE AREAS FOR MECHANICAL ENGINEERING
Materials
Statics & Dynamics
Fluid Mechanics
Thermodynamics & Heat Transfer
Mechanical Design
Instrumentation & Control
Vibrations
Solid Mechanics
Manufacturing/Production
Electrical Power and Machines
Electronics and Micro- processors
Computer Aided Engineering

What is Mechanical Engineering ?

Discussion

#1 Why have you come to study Mechanical Engineering?

#2 Name the ‘subsectors’ in Mechanical Engineering you might like to work in? Why?

#3 The Pros & Cons of being a Mechanical Engineer?

#4 Are more people coming to study to become a Mechanical Engineer? Why?

BOARD OF ENGINEERS MALAYSIA

(BEM)

Website: www.bem.org.my

Board of Engineers Malaysia (BEM)

- A statutory body constituted under the Registration of Engineers Act 1967 (REA)
- Officially formed on 23rd August 1972
- BEM falls within the ambit of responsibility of the Minister of Works
- BEM is established for the purpose of regulating the professional conduct and practice of registered engineers in order to safeguard the safety and interest of the public

Functions of BEM

- Keep and maintain the Register
- Process the Application for Registration
- Conduct and Monitor Continuing Professional Development Programmes
- Assess Academic Qualification
- Regulates the Practice & Conduct of the Engineering Profession
- Conduct Professional Assessment Examination

Assessment of Academic Qualifications by BEM

- BEM through its Engineering Accreditation Council (EAC) assesses and accredits engineering degrees offered by institutions of higher learning in Malaysia
- The EAC is the coordinating body on accreditation, representing the BEM, IEM, Lembaga Akreditasi Negara (LAN) and Jabatan Perkhidmatan Awam Malaysia (JPA)
- The accreditation team visits the institution to audit the facilities and have dialogue with academic staff and students

Graduate Engineer Registration with BEM

- It is mandatory for university graduate to register as Graduate Engineer if he/she wants to take up employment as an Engineer
- A Graduate Engineer is a person registered under Section 10(1) of the Registration of Engineers Act 1967 (Revised 2015)
- BEM recognises the experience gained by an engineering graduate only after he/she has registered as a Graduate Engineer

Professional Engineer (Ir) Registration with BEM

- Any Graduate Engineer who wants to apply for registration as a Professional Engineer (Ir.) must
  - be registered as a Graduate Engineer with BEM; and
  - have satisfied the training requirements of BEM; and
  - have passed the Professional Assessment Examination (PAE) of BEM or be elected as a Corporate Member of the Institution of Engineers Malaysia (IEM)

Reflection……

What have we learned today ?

End of Lecture 1