

## **Bachelor of Engineering (Hons) Mechanical Engineering** **KP/JPS(A5912)12/09**

Mechanical engineering applies principles of sciences and engineering to understand the characteristics of mechanical engineering systems. As such, this course contributes to scientific knowledge and bridges the gap between the fields of study like mathematical analysis, computational methods, engineering design and production.

The Mechanical Engineering programme offered seeks to combine excellence in education and research with service to society. This 4-year programme aims to provide graduates with an in-depth knowledge and understanding of the characteristics of the various state-of-art mechanical systems and devices.

The main objective of this course of study is to produce engineering graduates with the ability to acquire and apply knowledge of science and engineering fundamentals as well as an in-depth technical competence in the mechanical engineering discipline. Students will also learn to function effectively as an individual and in a group with the capacity to be a leader or manager as well as an effective team member.

### **Programme Objectives**

The Programme Objectives describe the career and professional accomplishments that the Mechanical Engineering programme would prepares the graduates to achieve in a few years after their graduation. The graduates should be able to:

1. Establish a successful career either in managerial or technical leadership in mechanical engineering or related fields in industry and other organizations where an engineering approach to problem solving is highly valued.
2. Contribute significantly in a multidisciplinary work environment with high ethical standards and with an understanding of the role of engineering in the sustainable economy and development.
3. Excel in graduate study and research, reaching advanced degrees in engineering and related disciplines.
4. Achieve success in professional development through life-long learning and Continuous Professional Development (CPD) and affiliated to internationally recognised professional bodies.

### **Programme Outcomes**

Upon completing this programme, the student is expected to attain the following:

- i. Ability to acquire and apply knowledge of mechanical engineering fundamentals;
- ii. Acquired in-depth technical competence in mechanical engineering;
- iii. Ability to undertake problem identification, formulation and solution;
- iv. Ability to utilise systems approach to design and evaluate operational performance;
- v. Ability to apply to the principles of mechanical engineering design for sustainable development;
- vi. Understanding of professional and ethical responsibilities and commitment to them;
- vii. Ability to communicate effectively, not only with engineers but also with the community at large;
- viii. Ability to function effectively as an individual and in a group with the capacity to be a leader or manager;

- ix. Understanding of the social, cultural, global and environmental responsibilities of a professional mechanical engineer;
- x. Recognising the need to undertake life-long learning, and possessing/acquiring the capacity to do so; and
- xi. Ability to use modern engineering techniques, skills, and computing tools necessary for mechanical engineering practice.

## **Careers**

Graduates may seek employment in a wide range of manufacturing industries such as those concerned with the production of machine tools, robots, air-conditioning equipment and automobiles. They can serve in a wide variety of positions such as production engineers, process engineers, design engineers, manufacturing engineers, quality assurance engineers, mechanical project consultants and research scientists.

### **Year 1**

Material Science  
Statics  
Circuit Theory  
Computer Aided Design and Programming  
Engineering Thermodynamics I  
Solid Mechanics I  
Manufacturing Technology I  
Dynamics  
Mathematics for Engineering I & II  
English for Engineering

### **Year 2**

Fluid Mechanics I  
Basic Electronics  
Signals, Circuits and Systems  
Engineering Materials  
Electrical Machines  
Numerical Methods and Statistics  
Mechanical Engineering Design I  
Engineering Analysis  
Engineering Thermodynamics II  
Solid Mechanics II  
Basic Economics, Accounting and Management

### **Year 3**

Process Control and Instrumentation  
Control Systems  
Mechanical Engineering Design II  
Heat and Mass Transfer  
Computer Aided Design and Manufacture  
Mechanical Vibrations  
Industrial Training  
Law for Engineers

## **Year 4**

Fluid Mechanics II  
Mechanics of Machines  
Principles of Refrigeration  
Engineer in Society  
Project

### **Elective Engineering Subjects\* (Choose 4 subjects)**

Quality and Reliability Engineering  
Computational Mechanics  
Internal Combustion Engine  
Manufacturing Technology II  
Computational Fluid Dynamics  
Industrial Engineering  
Automation and Robotics

### **Elective Engineering Related Subjects\* (Choose 1 subject)**

Project Management  
Management Principles  
Entrepreneurship

\*Subject to change/availability

### **MQA Subjects**

Bahasa Kebangsaan/Foreign Language  
Pengajian Malaysia  
Pendidikan Moral/Pengajian Islam

### **University Subjects**

Co-Curriculum  
Sun Zi's Art of War and Business Strategies