

# Advanced Diploma in Mechanical Engineering

## OVERVIEW

There is a shortage of highly skilled practically oriented mechanical engineers in the world today, due to new technologies only recently becoming a vital component of all modern plants, factories and offices. The critical shortage of experts in the area has been accentuated by retirement, restructuring and rapid growth in new industries and technologies. This is regardless of the recession in many countries. Many businesses throughout the world comment on the difficulty in finding experienced mechanical engineers.

## PROGRAMME OBJECTIVES:

The course also emphasises the development of practical skills and experimentation through the use of laboratories, industrial visits, etc. This course prepares students for employment in the electrical and electronic engineering sector. This course is suitable for students who have already decided to work in this area of work.

## DURATION COMPONENTS:

Classroom Training Hours: 30 - 42 Hours Per Module

## MODULE SYNOPSIS:

### ENG509 Control System and Instrumentation Engineering

This module aims to provide a basic understanding and build the mathematical background for modelling, designing, and analysing linear single-input single-output feedback systems.

### ENG510 Sustainable Industry, Design and Manufacturing Technology

Through one or several processing operations, manufacturing creates components or products from basic raw materials. The effectiveness of process selection will be based on the inter-related criterion of design parameters, material selection and process economies.

The module aims to help students develop and implement innovative technological solutions for manufacturing problems

### ENG511 Computer Aided Engineering

The aims of this module are twofold:

- to teach the fundamental theories and basic concepts underlying today's technologies in computer-aided design (CAD), computer-aided manufacturing (CAM), and computer-aided engineering (CAE), and
- to provide hands-on opportunities and training for students on some professional CAD/CAM/ CAE software.

By receiving thorough fundamental theoretical training and mastering real CAD/CAM/CAE software, students will be equipped and confident to solve difficult problems in design and manufacturing.

## ASSESSMENT METHODS:

70% Coursework & 30% Examination for all module (**Excluding ENG510, ENG514, ENG515, ADIA509 and ADIA509 are 100% Coursework**)

## PROGRAMME OUTCOMES:

Upon completion of this course, students will be able to understand the principles of Mechanical Engineering. They will have learned to apply those principles more widely, including different approaches to solving the problem in the workplace.

## AWARDING BODIES:

Global School of Technology and Management

## NUMBER OF MODULES:

9

## TOTAL CONTACT HOURS:

288

(Including Classroom, Tutorials, PC Labs, Laboratories, Workshops and Site Visit)

### ENG513 Dynamics and Vibrations

The module aims to provide students with the integrated knowledge required to understand dynamics and single-degree-of-freedom vibration systems.

### ENG512 Thermodynamics and Heat Transfer

The module's learning objectives are to provide students with the knowledge and understanding required to analyse thermodynamic systems concerned with conversion processes between heat and work. This module stresses the fundamentals while emphasising issues and limitations of the energy generation process and how processes can recover energy to improve overall efficiency.

Students will learn the first and second laws of thermodynamics, the use of these laws in various engineering applications, and fundamental modes of heat transfer (conduction, convection, and radiation).

### ENG507 Numerical Analysis

The module focuses on developing the mathematical skills and knowledge of science and engineering students in calculus and matrix theory to solve first- and second-order differential equations underpinning the engineering disciplines

### **ENG514 Industrial Design and Product Case Studies**

This module introduces industrial design as a creative discipline in sciences and engineering. Industrial design is known for its ability to innovate and add value to products and services.

Industrial designers solve problems centred on user needs to improve the quality of people's lives. The design incorporates unique problem-solving methods and creative processes, and industrial design intends to work with technological and ecological parameters appropriately.

The development and use of state-of-the-art tools and technologies put industrial design in a significant position socially and economically.

### **ENG515 Group Design and Innovation Project**

This module is a practical project-based module, where students will immerse themselves in engineering projects and product analysis.

Students will use the practical and project-related skills they have developed so far to design and produce components and/or products alongside necessary project management skills.

The learning objectives of this module are to provide students with an opportunity to integrate and apply knowledge from different disciplines of mechanical engineering to conduct an open-ended engineering project and requires team collaboration for its completion.

### **ADIA508 Industry Attachment**

Industrial Attachment is an important aspect and a component of a students' development. As part of the course curriculum, students are expected to undertake a 24 weeks/ 6-month industrial attachment in the related industries. Students will take an internship programme with construction companies related to their interests or area of specialisation.

GSTM will facilitate the arrangement and process of students' entire Industrial Attachment. Industrial Attachment applies to all students. The program will facilitate student-learning opportunities outside the classroom throughout the six-month attachment. Different business organisations will have different modes of training, which would be typical in real-life environments

Industrial Attachment is an integral part of the course. In the unlikely event that a student cannot be placed for Industrial Attachment, due to circumstances beyond the control of the student or the college, like non-approval of the Training Work Permit by the Ministry of Manpower, the student will be required to complete an Industrial Project (5000 words) under the supervision of a lecturer from GSTM.

### **ADIP509 Industry Project**

The industrial project applies only when a student is unable to secure an industrial attachment with any organisation. In the absence of an industrial attachment, the student must complete an individual project lasting 2 months.

The industrial project (5000 words) topic must be relevant to the construction management industry and approved by the school. Students have a maximum of Two months to complete the project after approval. The Industrial Project provides an opportunity for students to integrate their knowledge through application to a practical-based classroom project by selecting the student's choice of industry. Preferably, this project focuses on an organisation's identified management issues and/or opportunities.

The project work involves students developing, managing and achieving the objectives of the construction management project and applying theories, topics and knowledge that the students have learned in a real case scenario. It encourages a holistic approach to managing the managerial aspects of a construction management project, using the multiple theories and topics that the students have learned