PROGRAMME SYNOPSIS

Year 1 Semester 1

Course: EEM3113 Statics
Synopsis:
The topics that will be covered in this subject are fundamental concepts for the study of mechanics which includes force system, equilibrium of particles, force system resultants and equilibrium of static rigid bodies in two and three dimensions. This subject will also provide the students with the structural analysis, frictional and internal forces and evaluating the geometric aspect of the centroid and moment of inertial of a composite body.

Course: EEM3212 Materials Science
Synopsis:
This course will cover topics on an introduction to materials, the nature and properties of materials, mechanical properties of material, phase diagrams, iron and steels, aluminium, metals ceramics polymers, composite materials, testing of materials and the selection of materials.

Course: EEM3951 Engineering Laboratory 1
Synopsis:
This course provides hands on experience to the students to do experiments, evaluate the data, analysed the data into useful information and to let the students gain experience of team working and in the delegation of responsibility within the team. It consists of statics and materials engineering elements.

Course: EEC3622 Engineering Graphics
Synopsis:
This course provides training to students to produce technical detailing drawings using AutoCAD. The applications, tools, commands and functions in the CAD software are introduced. Demonstrations are given to show the approaches that different CAD tasks are carried out, and exercises are provided to allow students to practice the usage of the software.

Course: EEC3643 Mathematics 1
Synopsis:
This is a pre-calculus algebra subject designed to prepare engineering students to advance calculus and engineering mathematics. It is intended to develop the student's numerical skills and to equip them with the means and confidence to deal with the demands of: Complex Measurements of Land and Buildings, Computation of Data in the Analysis and Design of the Construction or Surveying Work. The module encompasses arithmetic and algebra, polynomials evaluation and factorisation, linear and simultaneous linear equations, partial fractions, number system, complex numbers, matrices and trigonometry.

Course: MPU3412 Co-curriculum
Synopsis:
Students will take part in organizing university's and outside events to gain opportunity of training and learning of specific techniques and skills related to the themes of the events apart from participating in soft skills improvement programs while joining other outdoor sports activities. These will allow students to practice effective communication skills, both verbally or written, polish managerial skills while becoming leaders and managing events in the university, and cultivate awareness of lifelong learning while exposing to well-diversify of knowledge, skills and techniques.

Course: UCS3112 Communication in Workplace
Synopsis:
It comprises basic knowledge and skills in workplace communication, providing a fundamental exposure and guide to the various forms of communication in the workplace covering both verbal communications and written communication. These involve conveying ideas and opinions, writing proposal, preparing reports, composing letters, analyzing data, oral communication and presentation.

Course: MPU 3113 Hubungan Etnik
Synopsis:
This course focuses on concepts of culture and ethnic relations, specially emphasises on the latest development in Malaysia. It includes the concepts of ethnic relations, insights of ethnic relations in Malaysia in the aspects of economics, politics, constitutions and religions in Malaysia. It also discuss about the challenges for the enhancement of the ethnic relation and the roles of the government and the society.

Year 1 Semester 2

Course: EEM3123 Dynamics
Synopsis:
The topics that will be covered in this subject are the study of the geometry of motion which relate displacement, velocity, acceleration and time, and kinetics which is the study of the relation existing between the forces acting on the body, the mass of the body and the motion of the body. The kinetic aspect will cover the equation of motion, the principle of work and energy and the principle of linear impulse and momentum. The topics also cover the application of fundamental mechanics to realistic machine configurations.

Course: EEM3223 Mechanics of Material
Synopsis:
This course introduces the theory and application of the fundamental principles on mechanics of materials. This course includes introduction to stress and strains, mechanical properties of materials, axial load, torsion, bending and transverse shear.

Course: EEM3432 Electrical Engineering
Synopsis:
This course will cover basic electrical components, concepts of AC and DC electrical analysis, single & 3 phase, and electrical machine.

Course: EEM3961 Engineering Laboratory 2
Synopsis:
This course provides hands on experience to conduct experiments, evaluate and analyze the data into useful information, gain experience of team working and delegation of responsibility within the team. This course consists of experiments on dynamics and solid mechanics.

Course: EEM3991 Engineering Workshop
Synopsis:
This course introduces workshop practice environment, thus enable students to apply the theoretical knowledge into practical exercises. The contents of this workshop practice include introduction to workshop safety, basic of bench work, milling processes, welding processes, conventional lathe machine operation and basic CNC machine operation.

Course: EEC3632 Engineering Programming
Synopsis:
The students will be given an introductory subject to basic computer software and computer Programming to solve simple engineering problems. Topics include: Introduction to Microsoft Words and Preparation of Report,

formal letter etc, Introduction to Computer Programming – Excel Spreadsheet and Problem Solving, Microsoft Project and Project Scheduling.

Course: EEC3653 Mathematics 2
Synopsis:
This subject will build on the knowledge gained in Mathematics I. It is designed to provide the students with the knowledge of mathematical sequences and series, vector, lines and planes, basic differentiation and integration that are applicable to mechanical engineering practices. Topics include Vector, Series, Geometry, Numerical Methods, Statistics, Differentiation and Integration.

Course: MPU 3123 TITAS
Synopsis:
This course focuses on concepts of culture and ethnic relations, specially emphasises on the latest development in Malaysia. It includes the concepts of ethnic relations, insights of ethnic relations in Malaysia in the aspects of economics, politics, constitutions and religions in Malaysia. It also discuss about the challenges for the enhancement of the ethnic relation and the roles of the government and the society.

Year 2 Semester 1

Course: EEM3442 Electronics Engineering
Synopsis:
This course will cover basics of analogue and digital electronic devices. The fundamental principles of atomic interactions are first presented theoretically. Then students are introduced to the PN junction concepts which describe most of the diodes operation. The diodes applications are then detailed. The transistor basics are explained in stages, starting with physical characteristics. Electrical characteristics include the proper biasing methods and principles of amplification. Then the principles of digital electronics are introduced. Finally the operation of basic microprocessor is explored.

Course: EEM3313 Thermodynamics 1
Synopsis:
This course will cover properties and changes of phase of pure substances, first law and energy balance for closed and open system, second law, reversible and irreversible processes, thermal efficiencies, isentropic processes and entropy balance.

Course: EEM3333 Fluids Mechanics 1
Synopsis:
This course will cover concept of fluid mechanics and properties, fluid dynamics, volume control analysis, differential and integral forms of continuity equations, Euler, Bernoulli, Cauchy, Navier-Stokes equations, energy equations, Reynolds theorem, linear and angular momentum and dimensional analysis.

Course: EEM3453 Measurement and Instrumentation Systems
Synopsis:
This course will cover basic concepts of measurements, electronic apparatus of measurements, signal generators and analyzer, digital instruments, data acquisition and fibre optic measurements.

Course: EEM3971 Engineering Laboratory 3
Synopsis:
This course provides hands on experience to conduct experiments, evaluate and analyze the data into useful information, gain experience of team working and delegation of responsibility within the team. This course consists of experiments on dynamics and solid mechanics.

Course: EEC3663 Mathematics 3
Synopsis:
This course will build on the knowledge gained in Mathematics II. Topics include Series, Differentiation, Integration, Statistics, First Order Differential Equations and Laplace Transform.

Course: UCS3122 Professional English: Essential Communications Skills
Synopsis:
This course provides a comprehensive reference guide on technical communication principles, skills and practice in workplace. It explains the principles of effective communication, both written and oral, and provides solid advice and practical guidelines on how to strengthen communication skills and produce good technical and business writing. It introduces the theory, specimen documents, suggested layouts and explanations that develop skills and understanding.

Year 2 Semester 2

Course: EEM3413 Product Design
Synopsis:
This course introduces concepts in engineering design. Topics include introduction to design in engineering, design process, need identification and problem definition, concept generation and evaluation, embodiment design and detail design. This course also discusses human factors in design, modelling and simulation, materials selection and materials in design, machine design, cost evaluation and communicating the design.

Course: EEM3343 Fluids Mechanics 2
Synopsis:
Cost accounting equips students with the basics of cost awareness and cost minimisation to ensure well allocation of resources in small and large scale business organisations.

Course: EEM3323 Thermodynamics 2
Synopsis:
This course will cover thermodynamics more advance subjects from thermodynamics 1. The subjects also includes topics related for design purposes.

Course: EEM3473 Computer Aided Design
Synopsis:
This course provides knowledge on design employing software. Students will construct design solutions using appropriate software.

Course: EEM3981 Engineering Laboratory 4
Synopsis:
This course provides hands on experience to conduct experiments, evaluate and analyze the data into useful information, gain experience of team working and delegation of responsibility within the team. This course consists of experiments on fluid mechanics.

Course: EEM3232 Material Engineering
Synopsis:
This course will cover topics on an introduction to materials, the nature and properties of materials, mechanical properties of material, phase diagrams, iron and steels, aluminum, metals ceramics polymers, composite materials, testing of materials and the selection of materials.

Course: EEM3672 Engineering Statistics
Synopsis:
The module encompasses fundamental of statistics, elements of probability theory, random variable, probability distribution, sampling theory, point and interval estimations, hypothesis testing, regression and correlation.

Course: MPU3312 Entrepreneurship Skills
Synopsis:
The module emphasizes on the application of entrepreneurship concepts such as theory, history, development and process. In this course, students are trained to generate ideas, identify business resources, analyze entrepreneurship environment, and provide realistic business planning.

Year 3 Semester 1

Course: EEM3143 Mechanics of Machine
Synopsis:
This course will cover Mechanical Design, machine component, gear, bearing, factor of safety, stress, strength, fatigue and related with machines.

Course: EEM3353 Heat Transfer
Synopsis:
This course will cover fundamentals of heat transfer, heat conduction, heat convection, heat radiation, boiling, condensation and heat exchanger

Course: EEM3463 Control Engineering
Synopsis:
This course will cover basic mathematics for control system, transfer function, block diagram, signal flow graph, gain formula, stability of linear system, time response, root locus and frequency response analysis, design via root locus and frequency response.

Course: EEM3613 Numerical Methods for Engineers
Synopsis:
This course is designed to provide students with a background in modern numerical methods. The topics covered are numerical linear algebra, numerical solution of ordinary and partial different equations, numerical methods for solving systems of non-linear equations and the introduction to optimization. Numerical computation software will be introduced in solving numerical problems.

Course: EEM3421 Mechanical Design
Synopsis:
To utilize knowledge and skills gained throughout the Programme to undertake a project to prepare engineering plans, carrying out structural analysis and design, preparing structural drawings and detailing.

Course: EEC3712 Basic Accounting and Finance
Synopsis:
This course introduces students to the basic concept in accounting and financial management within a firm. Emphasis will be on the general theories and practices in accounting as well as analysis and interpretation of the financial statements.

Course: MPU3212 Malaysian Economy
Synopsis:
This course introduces students to the basic concept economy. Attention will be given to the uniqueness of Malaysia economy.

Year 3 Semester 2

Course: EEM3944 Integrated Design Project
Synopsis:
To utilize knowledge and skills gained throughout the Programme to undertake a project to prepare engineering plans, carrying out structural analysis and design, preparing structural drawings and detailing.

Course: EEM3523 Industrial Health and Safety
Synopsis:
This course covers the introduction to industrial safety and health, hazards and their control, chemical safety, mechanical safety, electrical safety and industrial safety and health regulations.

Course: EEM3133 Mechanical Vibrations
Synopsis:
This course will cover the basic principles of noise and vibrations, human response to noise and vibrations, various sources of noises and vibrations and the means on assessing its risk and controlling them.

Course: EEM3512 Engineering Ethics
Synopsis:
This course will cover topics on link between Engineers and Society, Ethical and Moral Standards demanded in Society, Health and Safety Issues, Professional Practice, Legal Issues, Communication Skills and Management.

Course: UCS 3312 Green Technology
Synopsis:
This subject explores the green technology with basic knowledge and fundamental green principles in recycling, green home living, green daily life, green buildings, alternative energy, green transportation, green business and green economics.

Course: UCS 3212 Creativity and Innovation
Synopsis:
This subject explores the creativity and innovation of thinking skills with an exposure of principles of thinking, methods of generating ideas, creativity in problem solving techniques, creativity in writing as well as giving the experience of producing creative and innovative product through project given.

Year 3 Semester 3

Course: EEM3935 Industrial Training
Synopsis:
Ten weeks on job training at (any of the following) material suppliers, consulting or construction firms, development firms, government department and statutory bodies related to mechanical engineering practices. Nature of works encompasses site supervisions, measurements, contract administrative works etc. Work experience is recorded in work diary, training report and presentation upon completion.

Year 4 Semester 1

Course: EEM3913 Final Year Project 1
Synopsis:
In the beginning of the course, students are required to attend a research workshop where they will be taught on how to execute a research, conduct literature review, decide appropriate methodology, collect, interpret and analyse data. Later, students will be guided by the respective supervisors on how to plan for research which will be conducted later in the course entitled Final Year Project II. Students will carry out weekly discussion with their supervisor on the research topic, objective, scope, research programme, and the extent of the development of the research proposal. A report and a presentation of the research proposal are required at the end of the course.

Course: EEM3243 Manufacturing Technology
Synopsis:
The aim of this course is to introduce the concepts and appreciate the nature of manufacturing technology. It is important that the students will comprehend the requirements and activities in manufacturing a products.

Course: UCS3412 Bahasa Kebangsaan
Synopsis:
Kursus ini membolehkan pelajar mempertingkatkan kecekapan berbahasa sesuai dengan intelek pelajar untuk berkomunikasi secara lisan dan tulisan dalam konteks rasmi, kreatif dan bukan kreatif. Mata pelajaran ini disediakan untuk mempertingkat kecekapan berbahasa sesuai dengan intelek pelajar untuk berkomunikasi dengan lisan dan tulisan dalam konteks rasmi, kreatif dan bukan kreatif.

Year 4 Semester 2

Course: EEM3924 Final Year Project 2
Synopsis:
Students are required to attend a research workshop where they will be taught on how to execute a research, conduct literature review, decide appropriate methodology, collect, interpret and analyse data. Later, students will be guided by the respective supervisors on how to plan for research which will be conducted later in the course entitled Final Year Project II. A report and a presentation of the research proposal are required at the end of the course.

Course: EEC3552 Project Management
Synopsis:
Overview of management theories, Inception Stage, Feasibility Stage, Strategy Stage, Pre-Construction Stage, Construction Stage, Engineering Services Commissioning Stage, Completion, Handover and Occupation Stage, Post-Completion and Review, Project Close Out Stage.

Elective Subjects

Course: EEM43 Stress-Strain Analysis**
Synopsis:
This course covers the techniques of stress analysis with the emphasis on methods of stress-strain relations, the general optical and non-destructive testing techniques.

Course: EEM43 Advanced Materials**
Synopsis:
This course will cover topics on an introduction to advance materials, the composite materials, and failure of composite materials, superalloy, smart materials, and recycling of materials.

Course: EEM43 Advanced Mechanics of Materials**
Synopsis:
This course will cover Mechanical Design, machine component, gear, bearing, factor of safety, stress, strength, fatigue

Course: EEM43 Steam Technology**
Synopsis:
This course will cover the basic principles of steam technology, process steam and its application in various industries as well as means on assessing its risk and controlling them.

Course: EEM43 Maintenance Engineering**
Synopsis:
This course sets out to furnish all levels of engineering management with the material necessary to provide cost-effective maintenance, discussing the functional design of products as well as the identification of failure systems that permit scheduled maintenance procedures.

Course: EEM43 Non-Destructive Testing**
Synopsis:
The topics that will be covered in this subject are introduction to NDT and the basic fundamentals of NDT. This includes visual, liquid penetrant, magnetic, ultrasonic and radiography. The course also explain latest technology in NDT methods.

Course: EEM43 Corrosion Engineering**
Synopsis:
The topics that will be covered in this subject are introduction and history of ceramics. The structures of ceramics will also be introduced. The subjects that will entail the processes involved, the design and failure analysis.

Course: EEM33 Advanced Machining**
Synopsis:
The course introduce several non-traditional machining process and modern material removal methods, which include specialized production processes using lasers, electron beam, abrasive water jet, chemical and thermal processes. For each processes will examine based on the basic principles and the important machining parameters involved as well as the equipment, tooling and application issues.
Course: EEM43 Internal Combustion Engine**
Synopsis:
This course covers introduction to internal combustion engines with the emphasis on the engine cycle, fuel, fuel production and air pollution.

Course: EEM43 Operation Research**
Synopsis:
The topics that will be covered in this subject are introduction to OR on concepts why optimization is needed. Subjects includes modelling approach, linear programming, simplex method, integer programming, and transportation models.