UniKL
UNIVERSITI
KUALA LUMPUR

2024/2025

ACADEMIC HANDBOOK

EDITION 10

UNIVERSITI KUALA LUMPUR

KAMPUS CAWANGAN MALAYSIAN SPANISH INSTITUTE
(UniKL-MSI)

ACADEMIC HANDBOOK

10th Edition

All information in this academic handbook is correct at the time of print and subject to change without prior notice.

Further enquiries please refer to:

DEAN/HEAD OF CAMPUS
Universiti Kuala Lumpur
Kampus Cawangan Malaysian Spanish Institute
Kulim Hi-Tech Park,
09000 Kulim,
Kedah, Malaysia.

STUDENT'S PROFILE

Student's Picture

Full Name (as in the National Registration Identification Card-NRIC)	:
Programme	:
Programme Coordinator	:
Head of Section	:
NRIC Number	:
Student Number	:
Correspondence Address	:
Permanent Address	:
E-mail Address	:
Contact Number	:

TABLE OF CONTENTS

No	Items	Page Number
1	UniKL's Vision and Mission	**4**
2	Academic Activities Guidelines	**5**
3	Introduction to UniKL-MSI	**6 – 8**
4	UniKL-MSI Organisation Structure	**9**
5	Academic Administration Staff	**10 – 13**
6	Staff List:	
	a. Mechanical Section	**14 – 17**
	b. Manufacturing Section	**18 – 20**
	c. Electrical Electronics & Automation Section	**21 – 25**
	d. Engineering Section	**26 – 27**
	e. Student Development Section	**28 – 29**
	f. Business Technology Section	**30**
7	Advisory System/ Mentor-Mentee/ Probationary System	**31**
8	Admission Requirements	**32 -34**
9	Grading System	**35 - 36**
10	External Panel UniKL-MSI Programmes	**37 – 42**
11	Preparatory Programme Description (PEOs, PLOs & Programme Structure)	**43 – 47**
12	Diploma Programme Description (PEOs, PLOs & Programme Structure)	**48 – 65**
13	Bachelor Programme Description (PEOs, PLOs & Programme Structure)	**66 –100**
14	Synopsis of Courses offered by Section:	
	a. Mechanical Section	**101 – 107**
	b. Manufacturing Section	**108 – 113**
	c. Electrical Electronics & Automation Section	**114 – 122**
	d. Engineering Section	**123 – 129**
	e. Student Development Section	**130 – 135**
	f. Business Technology Section	**136 – 142**
15	Facilities And Ethics in Laboratory Work	
	a. Teaching And Learning Facilities	**143**
	b. Laboratories Facilities	**144**
	c. Objectives Of Laboratory Work and Workshop	**145**
	d. Work Ethics	

UniKL's VISION AND MISSION

Our vision is to become the leading entrepreneurial technical university in the country by 2020 through excellence in research, education, training, entrepreneurship, consultancy and community services.

CORPORATE STRATEGY

UniKL

VISION

TO BE THE LEADER ENTREPRENEURIAL TECHNICAL UNIVERSITY

MISSION

TO PRODUCE ENTREPRISING GLOBAL TECHNOPRENEURS

SHARED VALUES

C COMMITMENT

I INTEGRITY

T TEAMWORK

I INNOVATIVENESS

E EXCELLENCE

ACADEMIC ACTIVITIES GUIDLINES

ACTIVITIES	TIMELINE (ACADEMIC WEEK)
SEMESTER REGISTRATION	
Semester Registration for Returning Students	○ Registration is opened until the Friday of the 1st Week of the new academic semester
Late Registration	○ Late registration is opened until the Friday of the 2nd Week of the new academic semester and will be subjected to a fine of RM50.00 ○ If a student fails to register his academic semester within the specified period without any valid reasons given, his students status will be deferred, or he will be dismissed from the University
ADD/DROP/WITHDRAWAL FROM SUBJECT	
ADDING SUBJECT	○ Students may add subjects before the end of Week 1 of an academic semester but the approval to do so is subject to the availability of places in the classes concerned. ○ Add subject is not allowed after Week 1
DROP SUBJECT	○ Subject may be dropped before the end of Week 4 of and academic semester ○ Drop subject is not allowed after Week 4
WITHDRAWAL SUBJECT	○ Applications to withdraw registered subjects must be made from Week 5 to Week 9 of an academic semester ○ Withdrawals are not allowed after Week 9
VERIFICATION OF SUBJECT REGISTRATION	○ Students are responsible to verify the correctness of their subject registration records by Week 4.
FINAL EXAMINATION	Week 16 - 17
BAR LIST RELEASE	○ Week 12
PRINTING OF EXAM ENTRY SLIPS	○ Week 14 ○ Students must check to confirm correctness of spelling or names, student ID and IC Numbers ○ Students clear their status with Finance before printing the examination entry slip from e-CITIE system. ○ Students who have outstanding matters with Finance will not be able to print the examination slip.

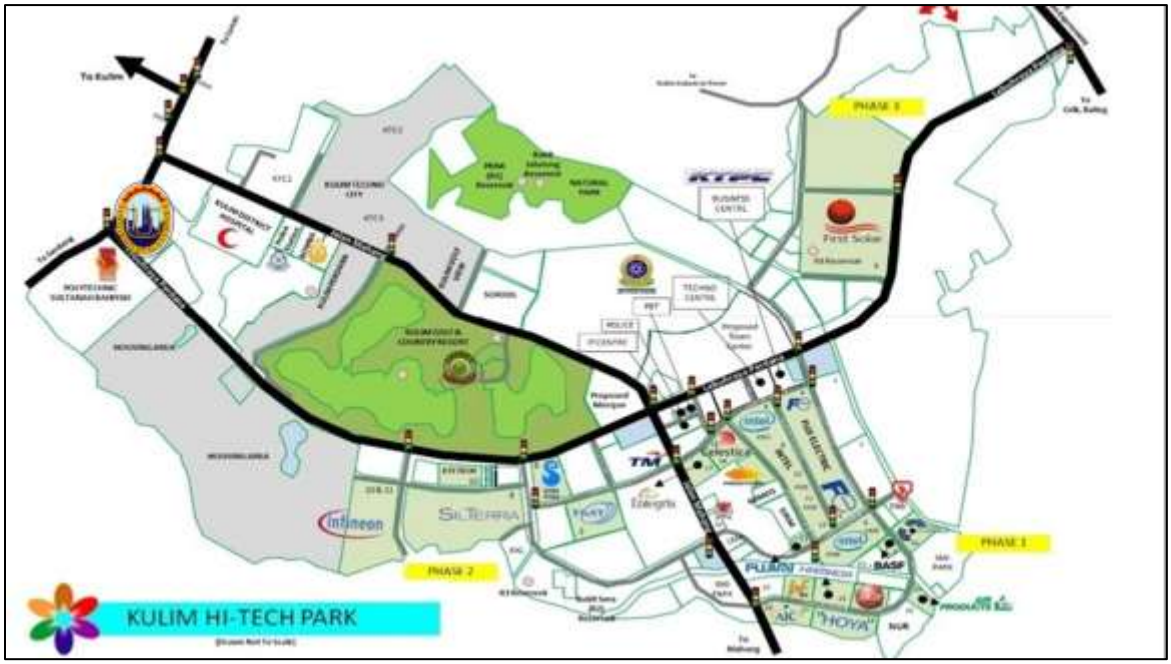
INTRODUCTION (UniKL-MSI)

Universiti Kuala Lumpur Kampus Cawangan Malaysian Spanish Institute (UniKL-MSI) is one of the listed branch campuses under Universiti Kuala Lumpur (UniKL). It is an advanced technical training centre in the field of engineering technology specializing in mechanical, manufacturing, electrical and electronics which are fully supported by the Malaysian government.

UniKL-MSI started its operation at the temporary campus at Techno Centre, Kulim Hi-Tech Park in August 2002 and later moved to the main campus which was built on a piece of land approximately 39 acres, also in Kulim Hi-Tech Park, Kulim, Kedah in December 2003. It was incorporated in August 2002 as a co-operation project between the Malaysian government represented by MARA and the Spanish government.

Courses offered are at foundation, diploma, bachelor to postgraduate levels. Professional training and customized courses are also available.

Currently, UniKL-MSI has 5 academic sections and offers 7 bachelors, 5 diplomas and 1 foundation programme. Table 1 lists the programmes.



Appendix 1: Location of UniKL-MSI Campus at Kulim Hi-Tech Park

In November 1999, MARA and CONTES signed the collaboration agreement to set up a higher technical training center, the Malaysian Spanish Institute, hereafter MSI, in the Kulim Technological Park. The purpose of this center is to provide highly qualified workforce to local companies as well *as to* provide training for the staff of local companies around the Kulim Technology Park. *Following the signing of the agreement*, the *construction* project kicked off on February 15, 2000. In accordance with the agreement, CONTES, as *the* supplier of technical assistance, was responsible to identify the professional skills required by the Malaysian companies to be enable MSI to design the trainings tailor-made for them.

Table 1: List of programmes offered by section

No.	Name of Section	No. of Programmes Offered
1.	Mechanical Section	1. Bachelor of Engineering Technology (Hons) in Mechanical (Automotive) – BETA Mechanical ***JPT/BPP (R3/525/6/0069) 09/29, MQA FA 13397***
		2. Bachelor of Engineering Technology (Hons) in Mechanical Design – BET MD ***JPT/BPP(R/521/6/0126) 06/27, MQA FA 7648***
		3. Diploma of Engineering Technology in Mechanical Design and Development – DET MDD ***JPT/BPP (R3/0714/4/0018)06/29, MQA/FA 13395***
2.	Electrical, Electronics and Automation Section	1. Bachelor of Mechatronics Engineering Technology (Automotive) with Honours – BETA Mechatronics ***JPT/BPP (R3/525/6/0067) 09/29, MQA FA11196***
		2. Bachelor of Engineering Technology (Hons) in Applied Electronics – BET AE ***JPT/BPP (R/523/6/0278) 06/27, MQA FA 7649***
		3. Diploma of Engineering Technology in Electromechanical Installation and Maintenance – DET EIM ***JPT/BPP (R3/0713/4/0034) 06/29, MQA/FA 13396***
		4. Diploma of Electronic Engineering Technology (Industrial Automation and Control) – DEET IAC ***JPT/BPP (R3/0713/4/0016) 06/29, MQA/FA 13668***
3.	Manufacturing Section	1. Bachelor of Engineering Technology (Hons) in Manufacturing (Automotive) – BETA Manufacturing ***JPT/BPP (R3/525/6/0068) 09/29, MQA FA 13398***
		2. Diploma of Engineering Technology in Production – DET PET ***JPT/BPP (R3/0714/4/0019) 06/29, MQA/FA 16275***
4.	Engineering Section	1. Bachelor of Mechanical Engineering with Honours – BeME 2. ***JPT/BPP (R/521/6/0160) 07/29, MQA FA 8216***Foundation in Engineering for Spanish Universities - Pre-Spain ***JPT/BPP (R2/520/3/0059) 10/22, MQA A 9480***
		3. Foundation in Science and Arts - FSA ***JPT/BPP (N/0011/0002) 4/27, MQA PA 15460***
5.	Business Technology Section	1. Bachelor of Business Technology in Automotive Management – BBT AM ***JPT/BPP (N/345/6/1095) 04/26, MQA PA 11195***
		2. Master of Business Technology - MBT ***JPT/BPP (N/345/7/1115) 08/27, MQA PA 13370***

The character of the MSI and in its effort to serve local companies and its social environment obliges the MSI to provide adequate solutions to adapt its training offer to real needs of the mechanical sector especially in automotive technology industry. During this identification stage in which the syllabus of the MSI has been defined, the purpose is to locate the real needs through identification of skills required by the local companies. Analysis was conducted aimed to complement, with a more qualitative character and a content, the guidelines for training needs of human resources established in the draft proposal.

Based on the functions that MSI played in its earlier days, particularly in serving local companies and community, the training centre naturally evolved into an entity which provided solutions and training that responded to real needs of the mechanical sector especially in the automotive technology industry which formed the heart of the Kulim Industrial Park.

The tailor-made training modules and solution services formed the basis of and to a certain extent, defined the curriculum and syllabus of the Malaysian Spanish Institute. Further analysis and modifications were made, adding more qualitative character and contents that complement the skills of the human capital suitably match for the automotive technology sector/industry.

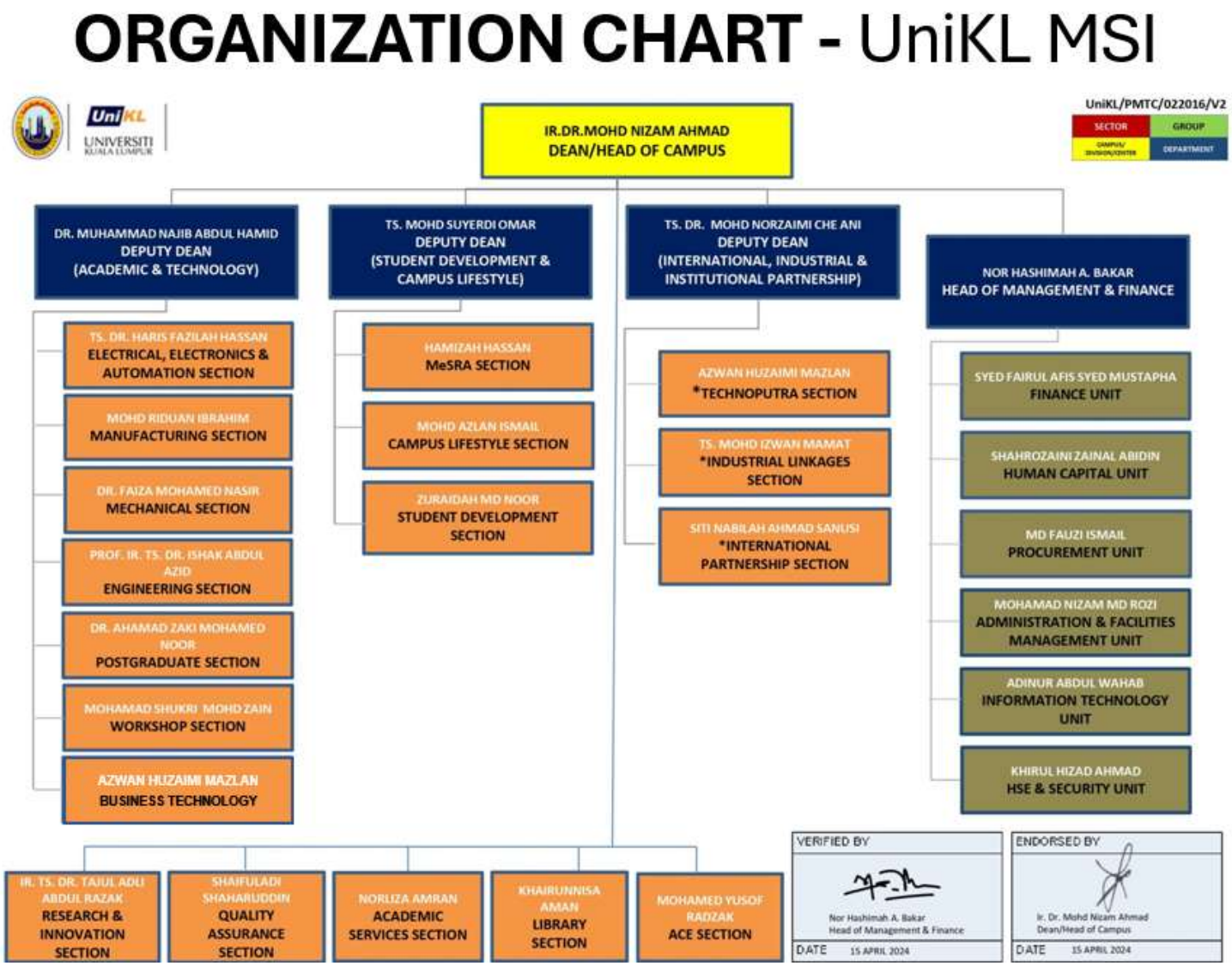
There is a lot of demand in the mechanical area for highly qualified engineers who can design, program and develop besides having good organizational skills and a sense of responsibility.

Apart from technical knowledge and skills, all UniKL MSI students will be exposed to other subjects which are also important for enhancing towering personality and future career prospects of our students such as Bahasa Malaysia, English, Spanish, Mandarin, Islamic and Moral Studies, Entrepreneurship and Project Management. For their Final Year Project, students are requested to develop and complete their project based on mechanical and automotive component manufacturing whereas for industrial internship (INTRA), students will undergo industrial training at manufacturing and automotive industries before completing their studies in UniKL MSI. Among companies which are linked with UniKL MSI INTRA students are Inokom, Ingress, Modenas, Silterra, Omron, Integris, Isuzu Hicom and Hicom Automotive Manufacturer Malaysia.

UniKL MSI campus provides excellent facilities for students which features the latest industrial equipment and machineries for workshop and laboratories covering Conventional Machining Workshop , CNC Machine Workshop, Mould Fabrication, Sheet Metal, Automotive Performance Lab, Vehicle Dynamics and Chassis Lab, Flexible Manufacturing Lab, Computer Aided Design Lab (CATIA), Hydraulics and Pneumatics Lab, Automation and Control System Lab, Electrical and Electronics Lab, Industrial Computing Labs, CNC Maintenance and Robotic Lab, Electric Machine Lab, Metrology Lab, Materials Lab and others. As the programs are focused on mechanical and automotive components manufacturing technology, our campus is also equipped with new machines and software such as Rapid Prototyping (RP) Machine, new CAD software – CATIA and other machines like Electro-Discharge Machine (EDM) and Wire cut Machine.

UniKL- MSI ORGANISATION STRUCTURE

UniKL MSI is leading by Dean/Head of Campus and supported by three (3) Deputy Deans. Dep. Dean (Academic & Technology), Dep Dean (Student Development & Campus Lifestyle) and Dep. Dean (International industrial & Institutional Partnership). In the aspect of administration, HR and Finance the Dean is being supported by the Head of Administration and Finance. The full Organizational Structure is illustrated in the Appendix 2.



Appendix 2: UniKL-MSI Organisation Structure

ACADEMIC ADMINISTRATION STAFF

Dean's Office

Head of Campus/ Covering Dean
Ir. Dr. Mohd Nizam b. Ahmad

Deputy Dean *(Academic & Technology)*
Dr. Muhammad Najib Bin Abdul Hamid

Deputy Dean *(Student Development & Campus Lifestyle)*
Ts. Mohd Suyerdi Bin Omar

Deputy Dean *(International, Industrial & Institutional Partnership)*
Ts. Dr. Mohd Norzaimi B. Che Ani

ACADEMIC ADMINISTRATION STAFF

Head of Section:

Mechanical
Dr. Faiza Binti Mohamed Nasir

Electrical, Electronics & Automation
Ts. Dr. Haris Fazilah Bin Hassan

Manufacturing
Mohd Riduan Bin Ibrahim

Engineering
Ir. Ts. Prof. Dr. Ishak Bin Abdul Azid

Student Development
Zuraidah Bt. Md Noor

Business Technology
Azwan Huzaimi Bin Mazlan

Postgraduate
Dr. Ahamad Zaki Bin Mohamed Noor

Quality Assurance
Shaifuladi Bin Shaharuddin

ACADEMIC ADMINISTRATION STAFF

Head of Department and Coordinator:		
Workshop and Teaching and Learning (CITC)	:	Siti Lydia Binti Rahim
Academic Services	:	Norliza Binti Amran
Research & Innovation	:	Ir. Ts. Dr. Tajul Adli Bin Abdul Razak
Library	:	Khairunnisa Binti Aman
International Partnership	: :	Nabilah Huda Md Amin
Industrial Linkages	:	Ts. Mohd Izwan Bin Mamat
Centre for Advancement & Continuing Education (ACE)	:	Mohamed Yusof Bin Radzak
Marketing, Student Recruitment & Admission (MeSRA)	:	Hamizah Bin Hassan
Innovation	:	Ts. Khairul Shahril Bin Shaffee
Research	:	Dr. Ahmad Kamal Bin Ismail
Final Year Project (FYP)	:	W Faradiana Binti W Maidin
Co-Curriculum	:	Fazrul Azmi b. Zulkifli

ACADEMIC ADMINISTRATION STAFF

Programme Coordinator:

New Programme

Master in Business Technology	:	Dr. Nurhayati Binti Abdullah

Bachelor Engineering, Engineering Technology & Business Technology Programmes

BET Mechanical (Automotive)	:	Siti Rohana Binti Ahmad
BET Mechatronics (Automotive)	:	Dr. Mohd Rezal Bin Mohamed
BET Manufacturing (Automotive)	:	Kauthar Binti A. Rhaffor
BET Applied Electronics	:	Najwan Osman Bin Ali
BET Mechanical Design	:	Dr. Mohamad Sabri Bin Mohamad Sidik
BE Mechanical with Honours	:	Assoc. Prof. Dr. Shahril Nizam Bin Mohamed Soid
BBT Automotive Management	:	Maisurah Binti Zakaria

Diploma Engineering Technology Programmes

DET Mechanical Design & Development	:	Noorhelinahani Binti Abu Bakar
DET Production	:	Syed Ahmad Faiz Bin Syed Mohd
DEET (Industrial Automation & Control)	:	Mohamad Rosyidi B. Ahmad
DET Electromechanical Installation & Maintenance	:	Julaida Binti Abd Jalil

Foundation in Engineering Programme

Foundation in Engineering for Spanish Universities	:	Zakiah binti Ahmad
Foundation in Science and Arts	:	Nor Shafiqa Binti Mohamed Shafiee

ACADEMIC STAFF – MECHANICAL SECTION

ACADEMIC STAFF	SPECIALISATION	RESEARCH AREA
Dr. Faiza binti Mohamed Nasir ***Head of Section*** *Senior Lecturer* PhD in Engineering, USM M.Sc. (Oil & Gas Engineering), Uni. Of Western Australia. M.Eng (Mech. Eng.) Uni. Of Strathclyde, UK.	Mechanical Engineering – Thermofluids, Thermodynamics, Heat Transfer, Petroleum Engineering	Thermophysical Properties, Thermodynamics Convection Heat Transfer, Heat Exchanger, Heat Pipes, Thermal management, CFD Thermal Analysis
Dr. Sharmiwati binti Mohammed Sharif ***CWS Coordinator*** *Senior Lecturer* Ph.D. in Engineering (Advanced Materials), USM M.Sc. (Material Science), UPM. B.Sc. (Hons.) (Material Science), UPM.	Materials Science	Ceramic Technology Porous Materials
Dr. Ahmad Kamal bin Ismail ***Research Coordinator*** *Senior Lecturer* Ph.D. in Mechanical Eng. (Combustion), USM. M.Sc. (Mechanical Eng.), USM. B.Eng. (Hons.) (Mechanical Eng.), USM.	Thermal Fluids	Porous Medium Combustion Cogeneration Thermal System
Baizura Bt. Zubir *Senior Lecturer* M.Eng (Mechanical- Advanced Manufacturing Technology), UTM. B.Eng. (Hons.) (Mechanical Eng.), USM.	Metrology, Engineering Design and Engineering Management	Product Design and Occupational Safety & Health
Mohamad Shukri bin Mohd Zain ***Head of Workshop*** *Senior Lecturer* M.Eng (Manufacturing System), UPM. B.Eng. (Hons.) (Mechanical Eng.), UTM.	Design Development, Automotive Testing & Prototyping, Automotive Standard and Compliant	Internal Combustion Engine & Applied Mechanics
Dr. John Jabaraj Devadason *Senior Lecturer* Ph. D (Biophysics), USM. M.Sc. (Medical Physics), USM. B.Sc. (Hons.) (Nuclear Science), UKM.	Physics, Medical Physics and Nuclear Science	Fundamental and Applied Physics, Fundamental and Applied Mathematics
Mohd. Nurhidayat bin Zahelem *Senior Lecturer* M.Eng. (Manufacturing System), UPM. B.Eng. (Hons.) (Mechanical Eng.), UTM.	Applied Mechanics, Strength of Material, Automotive Engineering and Molecular Dynamics	Synthesis of Nanomaterials (Carbon Based) and Automotive Testing

ACADEMIC STAFF – MECHANICAL SECTION

ACADEMIC STAFF		SPECIALISATION	RESEARCH AREA
	Mohamad Sabri bin Mohamad Sidik ***Programme Coordinator*** *Senior Lecturer* M.Eng. (Manufacturing System), UPM. B.Sc. (Hons.) (Mechanical Eng.), USM.	Quantum and Molecular Computational	Metal-Air Battery
	Ts. Khairul Shahril bin Shaffee *Senior Lecturer* M.Eng (Manufacturing System), UPM. B.Sc. (Hons.) (Mechanical Eng.), USM.	Strength of Materials, Fluid Mechanics, CAE	Finite Element Analysis and CFD.
	Nor Haniza binti Bakhtiar Jemily *Senior Lecturer* M.Sc. (Mechanical Eng.), USM. B.Tech. (Quality Control & Instruments), USM.	Quality Control & Instruments, Computer Aided Design (CAD)	Manufacturing design, Occupational Safety and Health Study
	Ts. Mohd Suyerdi bin Omar ***Deputy Dean SDCL*** *Senior Lecturer* M.Eng (Manufacturing Systems), UPM. B.Eng. Tech. (Hons.) (Product Design), UniKL.	Product Design and Development, Advanced Manufacturing and Tool and Die	Product Design and Development, Advanced Manufacturing, Plastic processing
	Fazidah binti Saad *Senior Lecturer* M.Sc. (Automotive Engineering), UIAM. B.Eng. (Hons.) (Mechanical Eng.), USM. Cert. (Automotive Eng. Tech.), IMH, Spain.	CAD, Design and Development, Automotive Engineering	Finite Element Analysis, Sound and Vibrations, Automotive Engineering
	Siti Rohana binti Ahmad ***Programme Coordinator*** *Lecturer* M.Sc. (Material Eng.), UniMAP. B.Eng. (Hons.) (Mechanical Eng.) UiTM.	Mechanical & Material Engineering	Mechanical Testing & Polymer Nanocomposites
	Johan Ihsan bin Mahmood *Lecturer* M.Eng Sc. (Structural Analysis) UNSW, Australia. B. Eng. (Hons.) (Mechanical Eng.), USM.	Structural Analysis, Finite Element Analysis, Product Design, Electronic Packaging	Applied Mechanics, Structural Analysis

ACADEMIC STAFF – MECHANICAL SECTION

	ACADEMIC STAFF	SPECIALISATION	RESEARCH AREA
	Mior Firdaus bin Mior Abd Majid *Lecturer* M.Sc. (Mechanical Eng.), USM. B.Eng. (Hons.) (Mechanical Eng.), USM.	Applied Mechanics & Thermal Fluid	Electronic Packaging, Electronic Cooling, Thermal Management
	Noorhelinahani Bt. Abu Bakar ***Programme Coordinator*** *Lecturer* M.Sc. (Energy Systems & The Environment), Strathclyde University, UK. B.Eng. (Hons.) (Mechanical Eng.), USM.	Thermal Fluid, Metrology	Renewable Energy (Biomass)
	Ts. Khairul Akmal bin Shamsuddin *Lecturer* M.Eng (Manufacturing System), UPM. B.Eng. (Hons.) (Manufacturing with Management), USM. Dip. (Manufacturing Technology), POLIMAS. Cert. (Manufacturing Technology), PUO.	Manufacturing System, Computer Aided Design (CAD), Ergonomics	Generative Modelling (CAD), Manufacturing Design and Fabrication
	Zainal Nazri bin Mohd Yusof *Lecturer* M.Sc. (Mechanical Eng.), USM. B.Eng. (Hons.) (Mechanical Eng.), USM.	Structural Analysis, Vibration and Welding Technology	Structural (Static and Dynamic)
	Awang bin Idris *Lecturer* M. Automotive Engineering, UMP. B.Eng. (Mechanical Eng.) (Hons.), UTM. Cert. (Automotive Eng. Tech.), IMH, Spain.	Internal Combustion Engine, Alternative Fuel, Computational Fluid Dynamics, Computer Aided Design, Natural Ventilation Study	Engine Performance Electric Vehicle and Additive Manufacturing
	W Faradiana Bt. W Maidin ***FYP Coordinator*** *Lecturer* M.Eng (Manufacturing Systems), UPM. B.Eng. (Hons.) (Manufacturing & Management), USM.	Metrology, Manufacturing System	Manufacturing System, Occupational Safety and Health
	Mazwin binti Tan *Lecturer* M.Sc. (Mathematics), USM. Applied Sc. (Hons.) (Computer Modelling), USM.	Calculus, Algebra and Differential Equation	Computer Aided Geometric Design

ACADEMIC STAFF – MECHANICAL SECTION

ACADEMIC STAFF		SPECIALISATION	RESEARCH AREA
	Mohd Faizal B. Abu Talib Asst. Lecturer B.Eng. (Hons.) (Automotive-Mechanical), UIAM. HND (Mechanical), CCTA, UK. Cert. (Automotive Eng. Tech.), IMH, Spain.	Dimensional Metrology, Metrology Calibration, Manufacturing Process, Welding Technology.	Manufacturing Design and Fabrication

ACADEMIC STAFF – MANUFACTURING SECTION

ACADEMIC STAFF		SPECIALISATION	RESEARCH AREA
	Mohd Riduan B. Ibrahim ***Head of Section*** *Senior Lecturer* M.Eng (Manufacturing Systems), UPM. B.Eng. Tech. (Hons.) (Tool & Die), UniKL. Dip. (Manufacturing Eng. – Tool & Die), TATI.	Tool and Die Design, Tool and Die Fabrication, CAD/CAM and CNC Machining	Tool & Die Design and, Fabrication, Cutting Tool Analysis
	Dr. Mohd Norzaimi B. Che Ani ***Deputy Dean - IIIP*** *Senior Lecturer* Ph.D. In Manufacturing UniKL M.Eng. (Industrial Engineering), UTM. B.Eng. (Hons.) (Mechanical – Industrial Engineering), UTM. Dip. (Mechanical Engineering), UTM.	Industrial Engineering, Lean Implementation, Quality & Continuous Improvement	Industrial Engineering, Lean Manufacturing System
	Dr. Ts. Muhammad Al'Hapis B. Abdul Razak *Senior Lecturer* Ph.D. in Mechanical Engineering, UTP. M.EngTech. (Manufacturing), UniKL IPROM. BET (Hons.) (Tool & Die), UniKL IPROM. DET Production, UniKL MSI.	Machining Technology, Turret Punch, EDM, Operation Management, Industrial Safety & Health	Powder mixed EDM, CNC Macro Programming, Industrial Safety
	Dr. Muhammad Husaini B. Abu Bakar *Senior Lecturer* Ph.D. Advance Machining M.Sc. (Mechanical-Advanced Manufacturing), USM. B.Eng. (Manufacturing with Management), USM.	CAE, Control System, Advanced Manufacturing	Underwater System Design (AUV & ROV), Nonlinear Control, Smart Material (MRF & MRE)
	Dr. Ahamad Zaki Bin Mohamed Noor **Head of Postgraduate** *Senior Lecturer* Ph.D. in Manufacturing Engineering, UTeM M. Manufacturing Eng. (Manufacturing System Engineering), UTeM B. Manufacturing Eng. (Robotics & Automation) (Hons.) UTeM	Robotics and Automation, Sustainable Manufacturing, Artificial Intelligence, Product Design	Artificial Neural Network, Manufacturing System, Image Processing,
	Dr. Mohamad Sazali B. Said *Senior Lecturer* Ph.D. in Mechanical and Materials Engineering, UKM. M.Sc. (Education), OUM. B.Tech. (Hons.) (Manufacturing), UTHM. Dip. (Tool & Die Tech.), GMI. Cert. (Automotive Eng. Tech.), IMH, Spain.	Tool and Die Design, Tool and Die Fabrication and CNC Machining	Manufacturing Design and Fabrication
	Dr. Ts. Mohd Shahrizan B. Yusoff *Senior Lecturer* Ph.D. in Manufacturing System, UPM. M.Eng (Manufacturing Systems), UPM. B.Eng. (Hons.) (Mechanical Eng.), USM.	Product Design, Operation and Management, Industrial Engineering, Industrial Business Management & CAD/CAM	Manufacturing Design and Fabrication, Industrial Engineering, Industrial Business Management & CAD/CAM

ACADEMIC STAFF – MANUFACTURING SECTION

ACADEMIC STAFF		SPECIALISATION	RESEARCH AREA
	Ir. Ts. Zulkarnain B. Abdul Latiff *Senior Lecturer* M.Eng (Manufacturing Systems), UPM. M.Sc. (Automotive Eng.), UIAM. B.Eng. (Hons.) (Manufacturing Eng.), Uni of Birmingham, UK Cert. (Automotive Eng. Tech.), IMH, Spain.	Product Design, Basic Machining, Process, Quality Control & Inspection, Rapid Prototyping, CAD/CAM	Crashworthiness, Ergonomics, Accident Engineering
	Shahruzaman B. Sulaiman *Senior Lecturer* M.Sc. (Automotive Eng.), UIAM. B.Tech. (Hons.) (Manufacturing), UTHM. Dip. (Tool & Die Tech.), GMI. Cert. (Automotive Eng. Tech.), IMH, Spain.	CNC Machining, Electro, Discharge Machining, Mould & Die, CAD/CAM	Optimum Cutting Tool in High, Speed Machining, Machining Performance in Electrical, Discharge Machining (EDM)
	Aznizam B. Abdulllah *Senior Lecturer* M.Eng (Manufacturing), UTeM. B.Tech. (Hons.) (Quality Control & Instrumentation), USM.	CAD, Robotics (WMR), Machine Design and Assembly	Wheel Mobile Robot, Obd-Ii Applications, Machine Design and Development
	Jum'azulhisham B. Abdul Shukor *Senior Lecturer* M.Eng (Manufacturing Systems), UPM. B.Eng. (Manufacturing Eng.), UniMAP. HND (Mechatronics Eng.), DeMontfort University, UK. Cert. (Automotive Eng. Tech.), IMH, Spain.	Industrial Automation & Mechatronics	Industrial Automation, Manufacturing Systems, Ergonomics.
	Mohd Zaki B. Ab Razak *Senior Lecturer* M.Eng (Manufacturing Systems), UPM. B.Eng. (Hons.) (Mechanical), USM. Cert. (Automotive Eng. Tech.), IMH, Spain.	Tool & Die Design and Fabrication, CNC Machining, CAD CAM	Tool & Die Design and Fabrication Manufacturing System Engineering
	Syed Ahmad Faiz B. Syed Mohd ***Programme Coordinator*** *Lecturer* M.Sc. (Automotive Eng.), UIAM B.Eng. (Hons.) (Manufacturing System), University of Hertfordshire. Dip. (Manufacturing Technology), POLIMAS. Cert. (Automotive Eng. Tech.), IMH, Spain.	Operation Management, Manufacturing System, Machining & Fabrication Process	Traditional and non-traditional machining process, Manufacturing System Engineering
	Kauthar Bt. A. Rhaffor ***Programme Coordinator*** *Lecturer* M.Sc. (Manufacturing), USM. B.Tech. (Hons.) (Quality Control & Instrumentation), USM.	Operation Management, Quality Control	Quality Management System and Occupational Safety & Health

ACADEMIC STAFF – MANUFACTURING SECTION

ACADEMIC STAFF		SPECIALISATION	RESEARCH AREA
	Siti Lydia Bt. Rahim *Lecturer* M.Eng (Manufacturing Engineering), UPM. B.Eng. (Hons.) (Design Manufacturing), UTeM. Dip. (Manufacturing Tech.), KUSZA	Manufacturing Design and Fabrication, CNC Machining, Rapid Prototyping	Additive Manufacturing
	Mohd Huda B. Mohd Kassim *Lecturer* M.Eng (Manufacturing Systems), UPM. B.Tech. (Hons.) (Tooling Eng.) UTHM. Dip. (Tool & Die Tech.), GMI. Cert. (Automotive Eng. Tech.), IMH, Spain.	Tool & Die and Mould Design & Fabrication, CNC Machining, CAD CAM.	CNC Machining, Manufacturing Systems Engineering.
	Suhaimi B. Nayan *Senior Specialist* Dip. (Precision Moulds Engineering), Institute of Precision Mould Penang. Cert. (Industrial Technician) ILP, Ipoh.	Tool and Die, Mould Fabrication	Mould Design and Analysis

ACADEMIC STAFF – ELECTRICAL, ELECTRONIC AND AUTOMATION SECTION

ACADEMIC STAFF		SPECIALISATION	RESEARCH AREA
	Dr. Ts. Haris Fazilah b. Hassan ***Head of Section*** *Senior Lecturer* Ph.D. (Electrical System), UniMAP M.Sc. (Electronics System Design Eng.), USM. B.Eng. (Hons.) (Electrical Eng. -Instrumentation), UiTM.	Renewable Energy, Industrial Instrumentation, Automation System, Electrical & Electronics	Renewable Energy & Smart System.
	Prof. Dr. Azmi bin Hassan ***Deputy President IIIP*** *Professor* Ph.D. (Systems Engineering) University of Wales, Cardiff UK. B.Sc. (Hons.) (Manufacturing Eng.), Leeds Metropolitan University, UK. Certificate of Manufacturing Technology, Airedale & Wharfedale College Leeds, UK.	Manufacturing and Systems Engineering	Manufacturing Engineering (Automation, CAM/CAPP), Artificial Intelligence & Optimisations, Radio Frequency Identification (RFID) and Applications
	Ts. Dr. Abdul Malik Bin Mohd Ali *Senior Lecturer* Ph.D. in Electrical & Electronics Engineering, UniKL M.Sc. (Electrical Engineering), Universiti Tun Hussein Onn. B.Eng. (Hons.) (Electrical) Staffordshire University, Staffordshire, United Kingdom.	Electrical High Voltage, Low Voltage, Control System, Power Electronics, Electric Machine, Medical Robotic, Robotic Automation, Biomedical Sensor and Printed Circuit Board System	Low/High Voltage Power Electronic System, Medical Robotic Application, Surface Biomedical Sensor and Data Analysis & Processing
	Ts. Dr. Nurazlin bt. Mohd Yaakop ***INTRA Coordinator*** *Senior Lecturer* PhD In Engineering (Power Electronics & Drive), UTeM M.Sc. (Automation, Image & Signal Processing), Univ. La Rochelle, France. B.Eng. (Hons.) (Electrical Eng.), USM. Cert. (Automotive Eng. Tech.), IMH, Spain.	Electric machines and Power Electronics	Electrical Power
	Ts. Dr. Norramlee b. Mohamed Noor *Senior Lecturer* Ph.D. in Electrical Power Engineering, UPM M.Eng (Electrical Power), UTM. B.Eng. (Hons.) (Information Technology), OUM.	Industrial Automation (PLC & FMS), Electrical & Electronic Engineering, Pneumatic & Hydraulic System.	Electrical Power Engineering, Electric Vehicle
	Dr. Mohd Fauzi b. Abu Hassan *Senior Lecturer* Ph.D. Industrial Automation, UniKL M.Sc. (Automation, Image & Signal Processing), Univ. La Rochelle, France. B.Eng. (Hons.) (Electrical – Mechatronics), UTM. Cert. (Automotive Eng. Tech.), IMH, Spain.	Automation, Signal and Image Processing	Computer Vision and Pattern Recognition

ACADEMIC STAFF – ELECTRICAL, ELECTRONIC AND AUTOMATION SECTION

ACADEMIC STAFF		SPECIALISATION	RESEARCH AREA
	Dr. Mohd Rezal b. Mohamed ***Programme Coordinator*** *Senior Lecturer* Ph.D. in Electrical & Electronics Engineering (Electrical Machine & Drives), USM M.Sc. (Electronics Eng.), UPM. B.Eng. (Hons.) (Electrical and Electronics), UPM.	Power Electronics, Electric Machine and Drives, Magnetic Pulsed	Electrical Vehicle, Electric Machine, Magnetic Pulsed, Electrical and Electronics Circuit Design
	Mohamed Yusof b. Radzak ***Head of ACE*** *Senior Lecturer* M.Sc. (Electrical & Electronic), USM. B.Eng. (Hons.) (Electrical & Electronic), USM.	Control and Robotics Electrical Machines	Mobile Robotics, Electric Vehicles, Renewable Energies and Smart Systems
	Halina bt. Hassan ***Programme Coordinator*** *Senior Lecturer* M.Sc. (Electronics System Design Eng.), USM. B.Eng. (Hons.) (Electrical & Electronics), UK.	Electronics, Digital Signal Processing	Electronics, Digital Signal Processing
	Norhalimatul Sadiah bt. Hj. Kamaruddin *Senior Lecturer* M.Eng (Electrical), UTM. B.Eng. (Hons.) (Electronics Electrical Systems Eng.), Leeds Metropolitan Univ. UK. Cert. (Automotive Eng. Tech.), IMH, Spain.	Control System, Measurement & Instrumentation, Sensor Technology	Electrical Process Tomography, Control System
	Najwan b. Osman Ali ***Programme Coordinator*** *Senior Lecturer* M.Sc. (Imaging), USM. B.Eng. (Hons.) (Mechatronic Eng.), USM.	Electrical Tomography	Electrical Tomography, Control System
	Norzalina bt. Hj. Othman *Senior Lecturer* M.Sc. (Automation, Image & Signal Processing), Univ. La Rochelle, France. B.IT (Hons.) (Networking), UUM.	Automation, Image and Signal Processing, Industrial Computing & Communication	Image Processing & Machine Vision, Hardware & Software Interfacing.

ACADEMIC STAFF – ELECTRICAL, ELECTRONIC AND AUTOMATION SECTION

ACADEMIC STAFF		SPECIALISATION	RESEARCH AREA
	Amir Shauqee b. Abdul Rahman *Senior Lecturer* M.Sc. (Electronic), USM. B.Eng. (Hons.) (Electrical & Electronic), USM.	Micro Controller, Embedded System Design	RFID Wireless Sensor Network Taste Sensing System Wireless System Design. Remote Monitoring and Control System.
	Mohamad Rosyidi b. Ahmad ***Programme Coordinator*** *Lecturer* M.Eng. (Electrical Power), UTM. B.Eng. (Hons.) (Electrical Electronics), UTM.	Electrical Power	Electrical Power
	Mohd Fauzi b. Alias *Lecturer* M.Sc. (Electrical & Electronic), USM. B.Eng. (Hons.) (Electrical & Electronic), USM.	PLC Automation, Electrical and Electronics, Digital Image Processing, Machine Vision	Automation, Image Processing and Machine Vision, Mobile Robot Vision System
	Nor Haslina bt. Ibrahim *Lecturer* M.Sc. (IT) Computer Science, UKM. B.Sc. (Hons.) (Information Technology, UiTM.	Computing	Computing
	Nurul Husna binti Hassan *Lecturer* MSc. Teaching of Mathematics, USM. BSc. (Hons.) Industrial Mathematics, UTM.	Calculus, Algebra, Differential Equation	Differential Equations, Ecosystem Modelling
	Norasrani binti Ramli *Lecturer* MSc. Mathematics, USM. BSc. (Hons.) Mathematics, USM.	Pure Mathematics, Calculus, Algebra, Differential Equation	Computer Aided Geometric, Design Mathematics
	Julaida bt. Abdul Jalil **Programme Coordinator** *Assistant Lecturer* B.Sc. (Electrical Eng.), Univ. Of Evansville Indiana, USA. Cert. (Automotive Eng. Tech.), IMH, Spain**.**	Electrical Power	Electrical Power

ACADEMIC STAFF – ELECTRICAL, ELECTRONIC AND AUTOMATION SECTION

ACADEMIC STAFF		SPECIALISATION	RESEARCH AREA
	Ts. Mohd Izwan b. Mamat ***Head of Industrial Linkages*** *Assistant Lecturer* B.Eng. (Hons.) (Electrical & Electronics), Universitaire de Nice Sophia Antipolis, France. Dip. (Technology Electrical, Electronic and IT Communication), IUT de Nice France. DET (Automated System & Maintenance), MFI.	Industrial Automation and Mechatronics	Automation and Mechatronics
	Shaifuladi b. Shaharuddin ***Head of Quality Assurance*** *Assistant Lecturer* B.Eng. (Hons.) (Electrical & Electronics), Universitaire de Nice Sophia Antipolis, France. Dip. (Technology Electrical, Electronic and IT Communication), IUT de Nice France DET (Electrical Equipment & Installation), MFI.	Electrical Power and Mechatronics	Industrial Automation and Control System
	Saharul b. Arof *Assistant Lecturer* B.Tech. (Mechatronics), (KUITTHO). Dip. (Industrial Electronics), GMI. Cert. (Automotive Eng. Tech.), IMH, Spain.	Automation and Control	Automation and Control

ACADEMIC STAFF – ENGINEERING SECTION

ACADEMIC STAFF		SPECIALISATION	RESEARCH AREA
	Prof. Ir. Ts. Dr. Ishak Bin Haji Abdul Azid *Professor* ***Head of Section*** Ph.D. +(Structural Optimization), University Of Wales, Cardiff, UK. M.Sc. (Civil Eng.), University of Wales, Swansea, UK B.Sc. (Hons.) (Mechanical Eng.), Clarkson University, USA	Structural and thermal analysis, Finite Element Analysis, Engineering Optimization, Process Improvement	Process Improvement, Thermal Stress, FEA, Optimization, Automotive Technology
	Ir. Dr. Mohd. Nizam bin Ahmad ***Dean/Head of Campus*** *Senior Lecturer* Ph.D. (Mechanical Engineering) – Biomechanics, USM M.Sc. (Mechanical Eng.), USM. B.Eng. (Hons.) (Mechanical Eng.), USM.	Biomechanics, Frictions in Orthodontics, Product & Mechanical Design, Finite Element Analysis, Structural Analysis.	Biomechanics Studies, Application of NiTi Shape Memory Alloy, Mechanical Design & Experimental Works, Structural Optimization.
	Dr. Shahril Nizam bin Mohamed Soid ***Programme Coordinator*** *Assoc. Prof.* PhD. Mechanical Engineering (Biomass Energy Systems), USM. M.Sc. (Mechanical Eng.), USM. B.Eng. (Hons.) (Mechanical Eng.), USM.	Thermodynamic, Energy Studies	Thermodynamic, Energy Studies
	Dr. Muhammad Najib bin Abdul Hamid ***Deputy Dean A&T*** *Senior Lecturer* PhD. Engineering (Noise and Vibration), USM M.Sc. (Mechanical Eng.), USM. B.Eng. (Hons.) (Mechanical Eng.), USM.	Applied Mechanics, Sound & Vibrations, Finite Element Method	Vibrations Analysis – Brake Vibrations and Squeal, Structural Optimization
	Ir. Dr. Tajul Adli bin Abdul Razak ***Research Coordinator*** *Senior Lecturer* PhD. (Mechanical Engineering), UPM M.Eng (Manufacturing System), UPM. B.Eng. (Aerospace) USM.	Automotive Design, CAD, 3D Scanning, Vehicle Development	Automotive Application
	Dr. Nurrasyidah Izzati binti Rohaizat *Senior Lecturer* Ph.D. (Fracture in Advanced High-Strength Steels), University of Sheffield, UK. M.Eng (Mechanical Engineering), University of Sheffield, UK.	Damage mechanisms in ferritic-martensitic microstructure of dual-phase steels (AHSS). Effects of heat-treatments (tempering) on microstructure morphologies and mechanical properties.	Fracture, Damage Mechanisms, Dual Phase Steels, Mechanical Properties, Metallurgy, Scanning Electron Microscopes, 2D & 3D Digital Image Correlations
	Ir. Megat Mohd Amzari bin Megat Mohd. Aris *Lecturer* M.Eng (Manufacturing System), UPM. B.Eng. (Hons.) (Mechanical Eng.), UTHM.	Metal Fabrication and Inspection (Static Equipment) Pressure Vessel, Heat Exchanger, Boiler, Piping and Structure. NDT.	Welding and Joining

ACADEMIC STAFF – ENGINEERING SECTION

ACADEMIC STAFF		SPECIALISATION	RESEARCH AREA
	Nurashikin binti Sawal ***Programme Coordinator*** *Lecturer* M.Sc. (Materials Eng.), USM. B.Eng. (Hons.) (Materials Eng.), USM.	Advanced Composite, Sandwich Structure	Polymer-Matrix Composite, Sandwich Structure
	Zakiah binti Ahmad ***Programme Coordinator*** *Assistant Lecturer* BSc. (Hons.) Nuclear Science, UKM.	Applied Physics	Applied Physics, Physics in education

ACADEMIC STAFF – STUDENT DEVELOPMENT SECTION

ACADEMIC STAFF		SPECIALISATION	RESEARCH AREA
	Zuraidah bt. Md Noor ***Head of Section*** *Lecturer* M.Ed. (English Language Teaching), UUM. B.Ed. (Hons.) (TESL), UKM.	Teaching English to Speakers of Other Languages	Language Learning and Teaching
	Fazrul Azmi b. Zulkifli *Lecturer* M.A (Linguistics and English Language Studies), USM. B.Ed. (Hons.) (TESL), UPM.	Teaching English To Speakers of Other Languages	Language Learning and Teaching, Sociolinguistic
	Abd Rashid b. Abdul Halim @ Jaafar *Lecturer* M.S, UPM. B.Syariah (Hons.), UM.	Islamic Studies (Syariah), Guidance and Counselling	Syariah and Contemporaries Issues, Syariah Audit in Islamic Cooperative.
	Azliza bt. Mohd Rusli *Lecturer* M.Ed. (English Language Education/TESOL), USM. B.Human Sc. (Communication), IIUM.	English Communication	English Communication and Technical Presentation Skills
	Faris bin Ahmad *Lecturer* M. Malay Studies, UM Bach. in Malay studies, UM	Hubungan Etnik, Malaysian Studies, Malay Language	Relation Ethnic in Malaysia, Malay Language, Malaysian Studies and Nationhood
	Dr. Khong Hou Keat *Lecturer* Ph.D M. App. Ling. (Teaching Spanish as a Foreign Language), Universidad de Jaén, Spain. M.Sc. (Biotechnology), USM.	Teaching Spanish to Speakers of Other Languages	Technology-mediated Language Learning including pedagogical innovations, motivation and strategies
	Azhar b. Aziz *Lecturer* M.A (Usuluddin), UM. B.A (Usuluddin), Al-Azhar University.	Islamic Studies	Islamic Studies, Comparative Studies on Religions (Islam And Christian) And Islamic Thoughts.

ACADEMIC STAFF – STUDENT DEVELOPMENT SECTION

ACADEMIC STAFF		SPECIALISATION	RESEARCH AREA
	Siti Nabilah binti Ahmad Sanusi ***Head of International Partnership*** *Lecturer* M. Arts (TESOL), Swinburne Univ. of Technology Sarawak Campus. B.Ed. (TESOL), USM	Teaching English to Speakers of Other Languages Linguistics Teaching Methodology	English teaching methodology – concerning all four skills Innovation in teaching English
	Nor Shafiqa bt. Mohamed Shaffiee ***Programme Coordinator*** *Lecturer* M. A. (Applied Linguistics), UUM B.Ed. (Hons.) (TESL), UniSEL	Teaching English to Speakers of Other Languages	English Language Studies (Teaching & Learning)
	Tan Hua An *Language Instructor* M. BA, OUM Bachelor of Human Resource Management with Honours, UUM Bachelor of Arts (Teaching Chinese as a Foreign Language), Xiamen University, China. Certificate of Accreditation in Teaching Chinese as a Second Language, The International Society of Chinese Language Pedagogy, China. Certificate for Teachers of Chinese to Speakers of Other Languages, Confucius Institute Headquarters / Hanban, China.	Teaching Mandarin and communication to speakers of other languages.	Functional and communicational approaches in teaching Mandarin.

ACADEMIC STAFF – TECHNOPUTRA SECTION

ACADEMIC STAFF		SPECIALISATION	RESEARCH AREA
	Azwan Huzaimi b. Mazlan **Head Section** Lecturer, M.BA, UiTM. B.Human Sc. (Political Science), IIUM.	Malaysian Studies	Impact of Islamic Values in Government Sectors Towards Development Nations
	Dr. Norhayati Abdullah ***Programme Coordinator*** Senior Lecturer, Ph.D (Islamic Economics) USM Master of Business Administration (MBA) UUM Bachelor Economics (Hons) UKM	Economics Islamic Economics Islamic Capital Market Management	Public Policy Islamic Capital Market Management Social Finance Entrepreneurship Financial Planning
	Mohd Fauzi b. Zainol Abidin ***Head of Section Technoputra*** *Lecturer* M.BA, UUM. B.BA (Hons.) (Operations Management), UiTM. Dip. (Business Studies), UiTM.	Business Administration and Entrepreneurship	Entrepreneurial learning, Technopreneurship & Business development, Entrepreneurial creativity & innovation.
	Munawir b. Ridzwan *Lecturer* M.BA, UUM. B.BA (Hons.) (Marketing), UiTM.	Business Administration, Marketing and Entrepreneurship	Entrepreneurial Learning, Technopreneurship & Business Development, Innovation Management, Marketing and Retailing
	Azita Aboo Bakar ***Programme Coordinator*** *Lecturer* Master of Management (UIA) Bachelor of Corporate Admin (Hons) UiTM Malacca Diploma in Public Administration ITM Malacca	Business Administration Entrepreneurship	Entrepreneurial learning, Technopreneurship & Business development, Entrepreneurial creativity & innovation.
	Maizurah Zakaria ***Programme Coordinator*** *Lecturer* Master of Accountancy (UiTM Shah Alam) Bachelor of Accountancy (UNIMAS)	Accounting Finance	Accounting, management accounting, financial accounting

ADVISORY SYSTEM/ MENTOR-MENTEE/ PROBATIONARY SYSTEM

Introduction

Universiti Kuala Lumpur has an Academic Advisory scheme to provide guidance and support to students, thereby creating a conducive and caring environment for students to excel in his/her academic pursuits. In this scheme, each lecturer will assume a leading and pro-active role of an academic advisor. Every student will be able to benefit from this scheme towards the objective of achieving a good university education and success in future endeavours. Students can seek friendly informed advice and guidance in areas of their studies, such as course structure, course registration, time management, etc. from their respective advisors. This scheme can also be a means for students to propel themselves to greater heights by tapping into the enormous resource of talent and expertise right at their doorstep.

Academic Advisor's Roles

1. Monitoring academic progress in means of ensure that students has fulfil their study plan upon completion of study.
2. Clarification of academic and institutional policies that has been outline in the University Rules and Regulation Handbook as well as the Academic Affair procedures.
3. Assistance with academic issues
    a. Meet the students under his/her supervision regularly individually or in group.
    b. Monitor students' academic performance, individually or in-group.
    c. Assist the students on the necessary requirements in completing their academic programme.
    d. Assist students, whenever possible in their academic problems and able to help them to seek the necessary guidance.
    e. Liaise with subject lecturer and program Head of Section/Program Coordinator on the progress of an individual student or in-group especially to those who are in KP status.
    f. Formulate action plans on improving students' performance.
    g. Provide feedback to the program Head of Section/Program Coordinator on the students' progress whenever required.
4. Navigation within the campus environment.

What to Expect of Your Advisor?

Students have a right to expect their advisor to:

- Have posted reasonable office hours of availability throughout the academic semester.
- Maintain appointments with students on a timely basis.
- Be knowledgeable about educational program requirements, curriculum, and professional and career opportunities within their field of expertise.
- Be knowledgeable about academic requirements, institutional policies and procedures to ensure academic success.
- Seek information they do not know or refer you to the appropriate campus resources as needed.

What Your Advisor Expects of You

Students have a responsibility to:

- Read and understand the academic policies and procedures contained in official Universiti Kuala Lumpur publications and on its online services, ECITIE (www.online.unikl.edu.my).
- Consult with their advisors during registration periods for subjects scheduling and any program modification.
- Inform their advisor of any academic difficulties, program or career changes
- Maintain scheduled appointments with their advisors and be prepared for advisement sessions with any supporting documentation or materials which could assist the advisor
- Provide advisors with feedback and follow through on advisor recommendations as needed

ADMISSION REQUIREMENTS

MINIMUM REQUIREMENTS TO REGISTER IN DIPLOMA PROGRAMME

MINIMUM ENTRY REQUIREMENTS FOR DIPLOMA OF ENGINEERING TECHNOLOGY PROGRAMME

- Pass in SPM or its equivalent with at least **credit in three (3) subjects** (minimum Grade C) including Mathematics and Natural Sciences or Technical Based Subjects; **OR**
- Accredited Certificate in Engineering, Engineering Technology, Technical or Malaysian Skills Certificate **Level 3 with PT3** or equivalent; OR
- Recognized related Technical/Vocational/Skills qualifications AND an adequate and relevant bridging programme, **OR**
- Pass in O-Level with minimum **Grade C** in three (3) subjects including Mathematics and science or technical based subjects, **OR**
- Pass in Sijil Kemahiran Malaysia (SKM) (**MQF Level 3**) qualification been recognized by Jabatan Pembangunan Kemahiran (JPK), government of Malaysia and according to approval by UniKL Senate, **OR**
- Pass in Sijil Vokasional Malaysia (SVM) qualification been recognized by government of Malaysia and according to approval by UniKL Senate, **OR**
- Pass Technical/Vocational/Skills qualifications and recognized and approve by UniKL Senate, **OR**

Other recognized equivalent qualification by Malaysian Government

ADMISSION REQUIREMENTS

MINIMUM REQUIREMENTS TO REGISTER IN BACHELOR PROGRAMME

MINIMUM ENTRY REQUIREMENTS FOR BACHELOR OF ENGINEERING TECHNOLOGY PROGRAMME

- Pass in Sijil Tinggi Persekolahan Malaysia (STPM) / Matriculation or its equivalent, with **minimum CGPA 2.0** and at least **Grade C** in Mathematics and one relevant Science subject; **OR**
- Recognized Diploma in Engineering or Engineering Technology or equivalent with minimum **CGPA 2.0**; **OR**
- Recognized related Technical/ Vocational/ Skills Diploma with **minimum CGPA 2.0**; **OR**
- Pass in A-Level with minimum **Grade D** in Mathematics and one (1) relevant Science subject; **OR**
- Pass in Sijil Tinggi Agama Malaysia (STAM) with minimum grade of Jayyid **minimum Grade C (CGPA 2.0)** in Mathematics and one relevant Science subject or equivalent: **OR**
- Pass in International Baccalaureate (IB) with **at least 24 points**; **OR**
- Pass in Diploma Kemahiran Malaysia (DKM)/ Diploma Lanjutan Kemahiran Malaysia (DLKM)/ Diploma Vokasional Malaysia (DVM) with a **minimum CGPA of 2.50** subject to the approval of the Senate/ Academic Board of the relevant institution; **OR**
- Pass in the DKM/DLKM/DVM with a **minimum CGPA of 2.00** AND have **at least two (2) years** of work experience in the related field.

MINIMUM ENTRY REQUIREMENTS FOR BACHELOR OF ENGINEERING PROGRAMME

- Pass in Sijil Tinggi Persekolahan Malaysia (STPM) / Matriculation or its equivalent with a **minimum CGPA of 2.00** and a **grade of C** in Mathematics and one (1) of the Physical Science subjects (i.e; Chemistry, Physics, and etc); **OR**
- Pass in Diploma Kemahiran Malaysia (DKM)/ Diploma Lanjutan Kemahiran Malaysia (DLKM)/ Diploma Vokasional Malaysia (DVM) with a **minimum CGPA of 2.50** subject to the approval of the Senate / Academic Board of the relevant institution; **OR**
- Pass in the DKM/DLKM/DVM with a **minimum CGPA of 2.00** AND have at least two (2) years of work experience in the related field; **OR**
- Pass in A-Level with **minimum Grade D** in Mathematics and one (1) of the Physical Science subjects (i.e; Chemistry or Physic); **OR**
- Pass in International Baccalaureate Diploma (IBD) with **minimum of 24 points** and attained a **minimum score of 4** in Mathematics and one (1) of the Physical Science subjects (i.e; Chemistry, Physic and etc); **OR**
- Pass in Sijil Tinggi Agama Malaysia (STAM) with minimum grade of Jayyid and pass SPM or equivalent with **minimum CGPA 2.00** with minimum Grade C in Mathematics and one relevant Physical Science subjects (i.e; Chemistry, Physic and etc); **OR**
- Pass in Diploma (Level 4, KKM) related to Engineering/ Engineering Technology fields from higher education provider recognized by Government of Malaysia with a **minimum CGPA 2.00**, **OR**
- Passed in other equivalent qualification recognized by Government of Malaysia.

MINIMUM ENTRY REQUIREMENTS FOR BACHELOR OF BUSINESS TECHOLOGY PROGRAMME

- Pass in Sijil Tinggi Persekolahan Malaysia (STPM) with a **minimum Grade C** (2.0) in any two (2) subjects, and a pass in Mathematics and English at SPM or any equivalent qualification, **OR**
- Pass in Sijil Tinggi Agama Malaysia (STAM) with **minimum grade of Jayyid** and a pass in Mathematics and English at SPM; **OR**
- Pass in Matriculation/Foundation with a **minimum CGPA 2.00** out or any equivalent qualification, **OR**
- Pass the DKM/ DLKM/ DVM with a **minimum CGPA of 2.00** AND have at least two (2) years of work experience in the related field **OR**
- Pass in Diploma Kemahiran Malaysia (DKM)/ Diploma Lanjutan Kemahiran Malaysia (DLKM)/ Diploma Vokasional Malaysia (DVM) with a **minimum CGPA of 2.50** subject to the approval of the Senate/ Academic Board of the relevant institution: **OR**
- Pass in A-Level with **minimum Grade D** in any two (2) subjects, and a pass in Mathematics and English at O-Level, or any equivalent qualification, **OR**
- Pass in International Baccalaureate (IB) with **at least 24 points**; **OR**
- Any qualifications equivalent to Diploma or Advanced Diploma (**Level 4 or Level 5, KKM**).

GRADING SYSTEM

PASSING GRADE

The general passing grade in all subjects is D and above except for Industrial Training and Co-Curriculum. Meanwhile, the passing grade for all Regulatory Compulsory (Mata Pelajaran Umum) subjects is Grade C. However, the University, with the endorsement of the Senate, allows subjects to have different passing grade as per required by the programme or the professional body or the certification board.

A student's performance in a subject is reflected by the grade received.
Table 1: Grade and Point Value for courses other than Industrial Training
Table 2: Grade and Point Value for Industrial Training

Table 1: Grade and Point Value for courses other than Industrial Training

Mark	Grade	Point Value	Status
80 – 100	A	4.00	
75 – 79	A-	3.67	
70 – 74	B+	3.33	
65 – 69	B	3.00	
60 – 64	B-	2.67	Pass
55 – 59	C+	2.33	
50 – 54	C	2.00	
45 – 49	C-	1.67	
40 – 44	D	1.00	
00 – 39	F	0.00	Fail

Table 2: Grade and Point Value for courses other than Industrial Training

Mark	Grade	Point Value	Status
80 – 100	M	Merit	Pass
50 – 79	S	Satisfactory	Pass
00 – 49	F	Fail	Fail

GRADE POINT AVERAGE (GPA)

The Grade Point Average (GPA) is defined as the total grade point received by a student in a semester divided by the number of credit hours/ credit counted in that particular semester.

Semester Grade Point
Total Credit Hours / Credit calculated for that semester

CUMULATIVE GRADE POINT AVERAGE (CGPA)

The Cumulative Grade Point Average (CGPA) is defined as the sum of all the semesters' grade points divided by the total credit hours counted for all semesters in which the student had registered for.

Total Semester Grade Points for All Semester
Total Credit Hours/ Credit calculated for all semesters

RE-SIT TO GRADUATE

A final semester student may apply to re-sit maximum of two failed courses taken at the last semester of his study or failed at the semester just before his industrial training. The student must be in good standing and his coursework marks for the failed course(s) must be = 40% of his total coursework marks. However, if he fails the re-sit to graduate exam, the student will need to repeat the course.

SUPPLEMENTARY

Supplementary Paper is unique to UniKL RCMP only in order to accommodate the clinical training of the students. Students who failed a course are allowed to re-sit immediately after results announcements.

Academic Offences is actions which would have the effect of unfairly promoting or enhancing one's academic standing community at an Institute of University Kuala Lumpur.

There are two categories of academic offences.

a. Academic Misconducts
b. Examination Misconducts

ACADEMIC MISCONDUCT

The Academic Misconducts are listed below, however the list is not exhaustive.

I. Plagiarism – an act or instance or closely imitating the language and thoughts of another author without authorization and the representation of that author's work as one's own, as by not crediting the original author.
II. Collusion – when a student or students collaborate with another student or students as an individual or group with the intention of cheating to gain mark or grade to which they are not entitled.
III. Fraud and Forgery – commission of fraud and forgery include but not limited to falsification of University academic records.
IV. Abuse of Resources – Infringing upon the right of other students to fair and equal access to any University library materials and comparable or related academic resources.

EXAMINATION MISCONDUCTS

Examination misconducts is any attempt by a student to give or obtain assistance in a formal academic assessment exercise without the knowledge of the organizer. Examination misconduct may include possessing any unauthorized materials or devices, giving or receiving or in possession of materials related to the assessment, referring and using prohibited references and communicating with other exam candidates. If a student is found to have committed examination misconducts, he/she will be suspended or terminated.

EXTERNAL PANEL UniKL-MSI PROGRAMMES

EXTERNAL EXAMINER/INDUSTRIAL ADVISORY PANEL/PROGRAMME ADVISORY COMMITTEE

INTRODUCTION

EXTERNAL EXAMINER (EE)/ INDUSTRIAL ADVISORY PANEL (IAP)

Each programme has established an External Examiner (EE) and Industry Advisory Panel (IAP) consisting of academic and industry experts who provide strategic advice on our education and research activities and senior academics. Our academic and industry panel members are highly valued for their academic experience and external industry perspective and also their contribution in promoting and strengthening academic-industry collaboration.

OBJECTIVES of EE/IAP

1. To evaluate the quality on the programme offered with respect to curriculum, teaching & learning activities and facilities, human resource, management system, library facilities and other related facilities.
2. To evaluate the examination, process and management.
3. To evaluate the appropriateness of examinations questions, to verify the appropriateness of the examinations marking schemes.
4. To recommend improvements on programme implementation, conduct and management of examination, examinations questions and the marking schemes.
5. To submit a detailed type-written report to the Dean/Head of Campus providing his/her assessment based on the above criteria. Handwritten reports will not be accepted.

BACHELOR PROGRAMMES

Bachelor of Engineering Technology (Hons) in Mechanical (Automotive)

External Examiner (EE)

External Examiner
Prof. Ir. Dr. Shahrir Abdullah
Universiti Kebangsaan Malaysia (UKM)

Industrial Advisory Panel (IAP)

Omar bin Md. Noh
Business Development Manager - Antenna Co. Ltd

Sharul Faizal bin Sharudin
Senior Manager
Perusahaan Otomobil Kedua Sdn Bhd (Perodua)

Bachelor of Mechatronics Engineering Technology (Automotive) with Honours

External Examiner (EE)

Prof. Ir. Dr. Nor Ashidi Mat Isa
Universiti Sains Malaysia (USM)

Industrial Advisory Panel (IAP)

Mohamad Nasrul bin Abdul Satar.
R&D Staff Engineer
Continental Automotive Malaysia

Suhaimi bin Ishak
Assistant Manager
Showa Denko HD (M) Sdn Bhd

Bachelor of Engineering Technology (Hons) in Manufacturing (Automotive)

External Examiner (EE)

Prof. Dr. Shamsuddin bin Sulaiman
Universiti Putra Malaysia (UPM)

Industrial Advisory Panel (IAP)

Mohd Fadhli Suib
Senior Project Manager/ Engineer Continental Automotive Malaysia

Fouzun Naseer bin M N Mohd Yusoff -
(Program Director for Market and Industry Development - Collaborative Research in Engineering, Science and Technology (CREST))

Mohamad Sohaifol Soid
Production Manager Human Machine Interface (HMI)
Continental Automotive Malaysia Sdn. Bhd)

Bachelor of Engineering Technology (Hons) in Mechanical Design

External Examiner (EE)

Assoc. Prof. Ir. Dr. Mokhtar Awang
Universiti Teknologi Petronas (UTP)

Industrial Advisory Panel (IAP)

Mohd. Zaidi Ahmad
Engineering Section Manager
MOTOROLA Solutions (M) Sdn Bhd

Omar bin Md. Noh
Business Development Manager
Antenna Co. Ltd

Bachelor of Engineering Technology (Hons) in Applied Electronics

External Examiner (EE)

Assoc. Prof. Ir. Dr. Arjuna Bin Marzuki
Universiti Sains Malaysia (USM)

Industrial Advisory Panel (IAP)

Ismail Bin Umar
Senior Engineer
Infineon Technologies (Kulim) Sdn Bhd

Murasoliselvan Karunanithi
Technical Delivery Program Manager
UST Global, Penang, Malaysia.

Bachelor of Mechanical Engineering with Honours

External Examiner (EE)

Ir. Prof. Dr. Mohd Zulkifly bin Abdullah
Universiti Sains Malaysia (USM)

Industrial Advisory Panel (IAP)

Ir. Mukridz Md Mohtar
R&D Mechanical Staff Engineer
Continental Automotive Instruments Malaysian Sdn Bhd

Ir. Aziz Bin Kader
Head of Engineering & Maintenance
Schott Glass (Malaysia) Sdn Bhd

Ir. Dr. Mui Kai Yin
Trainer
Career Growth Sdn Bhd

Bachelor of Business Technology (Honours) in Automotive Management

External Examiner (EE)

Assoc. Prof. Dr. Yusuf Hj Othman
International Islamic University Malaysia (IIUM)

Assoc. Prof. Dr. Shuhymee Ahmad
Universiti Utara Malaysia (UUM)

Industrial Advisory Panel (IAP)

Adi Shahril Abd Rais
Maypartners & Consultancy Sdn Bhd

Shahril Hashim
Perodua Sales Sdn Bhd

DIPLOMA PROGRAMMES

Diploma of Engineering Technology in Mechanical Design and Development

External Examiner (EE)

Dr. Muhad Rozi Mat Nawi
Universiti Teknologi MARA (UiTM)

Industrial Advisory Panel (IAP)

Ir. Jailani b. Besar
Manager
Proton Sdn Bhd

Mohd Imran Ibrahim
AHAR Consultants PLT

Diploma of Engineering Technology in Production

External Examiner (EE)

Mohzani Mokhtar
Universiti Sains Malaysia (USM)

Industrial Advisory Panel (IAP)

Mazwan bin Noor
General Manager
Syarikat Hang Tuah

Ahmad Kamil bin Fadzil
Engineer
Toyota Assembly Services Sdn. Bhd

Diploma of Engineering Technology in Electromechanical Installation and Maintenance

External Examiner (EE)

Dr. Ali Sophian
International Islamic University Malaysia (IIUM)

Industrial Advisory Panel (IAP)

Wan Ahmad Syahrizan Rozli bin Wan Ali
HSE Manager
Subsea7 Malaysia Sdn Bhd

Diploma of Electronic Engineering Technology (Industrial Automation and Control)

External Examiner (EE)

Ts. Dr. Abdul Halim bin Ismail
Universiti Malaysia Perlis (UniMAP)

Industrial Advisory Panel (IAP)

Mohd Haidar Bin Md Hamzah
Senior Engineer
Intel PSG (formerly known Altera

Mohd Azad Faris Bin Adam
Senior Production Engineer
MS Elevators Sdn.Bhd

Hasrul Kushairi Bin Hasni
Embedded Test Delivery Manager
UST Global (Malaysia) Sdn. Bhd.

FOUNDATION PROGRAMME

Foundation in Engineering for Spanish Universities

Programme Academic Committee

Salwani Abu Bakar
Head of Section Pre-University & General Studies
German Malaysian Institute (GMI)

MASTER PROGRAMME

Master of Business Technology

Programme Assessor

Professor Dr. Noorliza Karia
Operations Section,
School of Management,
Universiti Sains Malaysia (USM)

Programme Assessor

Professor Dr. Sofri Bin Yahya
Graduate School of Business
Universiti Sains Malaysia (USM)

Programme Assessor

Assoc. Pro. Dr. Mohd Faizal Mohd Isa
Human Resource Department
School of Business Management
College of Business,
Universiti Utara Malaysia (UUM)

Industrial Advisory Panel

Mr. Nazri Bin Ismail
Head Commercial & Stakeholders Management Division.
Penang Port Sdn Bhd

FOUNDATION PROGRAMME

S50 - FOUNDATION IN ENGINEERING FOR SPANISH UNIVERSITIES (PRE-SPAIN)

BACKGROUND

In response to the rapidly increasing industrial demand, a collaborative effort between the Malaysian and Spanish government gave birth to UniKL MSI. Since August 2002, UniKL MSI which is located in Kulim Hi-Tech Park, Kedah offers automotive engineering programme with the combination of theoretical training and practical application. This programme is Self-Sponsored and also Young Talent Development Programme (YTP). In July 2008, UniKL MSI launched a Pre-Spain Programme under MARA sponsorship. The Pre-Spain Programme is which is using 100% Edexcel A-level system with an additional subject in Spanish. Students, who have completed 2 years of Pre-Spain Program at UniKL MSI are eligible for entrance into any field of engineering courses at three of the most established and prestigious universities in Spain.

The Pre-Spain Programme provides its students with professional and dedicated academicians, who are committed towards preparing students to excel in their future undertakings.

PROGRAMME DESCRIPTION

The Pre-Spain Programme is a 2 years foundation programme for students who wish to further their studies at Spanish Universities. This Programme is fully sponsored by MARA under “Programme Ijazah Luar Negara (PILN)” especially for selected students who have achieved excellent results in Sijil Pelajaran Malaysia (SPM). This program also opens to private candidate (self-sponsored) who wish to pursue bachelor’s degree in engineering in Spain.

At UniKL MSI, the students need to sit for the GCE International Advance Level Examination EDEXCEL (JCQ: Joint Council for Qualifications) for subjects such as Core Mathematics, Mechanics, Physics and Chemistry. The exam will consist of 2 stages:

i. the Advance Subsidiary Level (AS)
ii. the Advance Level (A2)

Apart from having A-level examination, students are also required to sit for DELE official Spanish examination. This examination will access the students’ Spanish language proficiency. For MARA sponsored students, they are required to pass the DELE examination with B1 level. The main objective of this Programme is to ensure that students are prepared for entry into tertiary education in various fields of engineering technology in Spain.

PROGRAMME STRUCTURE AND DESCRIPTION

Program Educational Objectives (PEOs)

1	To produce students who are **knowledgeable** and **competent** in **Science and Technology**.
2	To produce students who are capable to apply principles **of Science and Technology** in **problem solving**.
3	To produce students who are able to **communicate** effectively verbal and non-verbal either individual or in group.
4	To produce students who are committed to the importance of **lifelong learning** and **continuous improvement**.

Program Learning Outcomes (PLOs)

1	Acquire understanding of facts, concept, principles, process and procedures in science and technology.
2	Apply knowledge of fundamental principles to identify and solve scientific problems.
3	Apply experimental investigations of scientific problems using data from relevant sources individually or in group.
4	Practice effective communication and professionalism, with ethics and social responsibility to support their independent study in Spanish Universities.
5	Competent in obtaining resources and able to engage in independent and lifelong learning.

PROGRAM DESCRIPTOR

Program Code : **JPT/BPP (R2/520/3/0059) 10/22, MQA A 9480**
Final Award : **Foundation in Engineering**
Study Duration : **2 years**

Semester 1			Semester 2		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
MPU1153	Pengajian Malaysia 2/ Bahasa Melayu Komunikasi 1	3	SNP05202/ SNP06202	Spanish 2/ English for Academic Purposes 1	2
SNP01106	Chemistry 1	6	MPU1253	Intercultural Communication	3
SNP03104	Core Mathematics C12	4	SNP02205	Physics 2	5
SNP02106	Physics 1	6	SNP03204	Core Mathematics C34	4
SNP05102/ SNP06102	Spanish 1/ Study Skill	2	SNP04203	Mechanics M1	3
			SNP01205	Chemistry 2	5
Total Credit Hours		**21**	**Total Credit Hours**		**22**

Semester 3			Semester 4		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
MPU1353/ MPU1363	Pengajian Islam di Malaysia/ Pengajian Moral di Malaysia	3	*Spanish Language Intensive Program		
SNP01305	Chemistry 3	5			
SNP02305	Physics 3	5			
SNP04303	Mechanics M2	3			
SNP05302/ SNP06302	Spanish 3 / Writing for Academic Purposes	2			
SNP07303	Engineering Drawing & CAD	3			
Total Credit Hours		**21**	**Total Credit Hours**		
TOTAL CREDIT TO GRADUATE (TCG)					**64**

S51 - FOUNDATION IN SCIENCE AND ARTS (FSA)

BACKGROUND

In response to the rapidly increasing industrial demand, a collaborative effort between the Malaysian and Spanish government gave birth to UniKL MSI. Since August 2002, UniKL MSI which is located in Kulim Hi-Tech Park, Kedah offers automotive engineering programme with the combination of theoretical training and practical application. This programme is Self-Sponsored and also Young Talent Development Programme (YTP). In July 2008, UniKL MSI launched a Pre-Spain Programme under MARA sponsorship. The Pre-Spain Programme is which is using 100% Edexcel A-level system with an additional subject in Spanish. Students, who have completed 2 years of Pre-Spain Program at UniKL MSI are eligible for entrance into any field of engineering courses at three of the most established and prestigious universities in Spain.

The Pre-Spain Programme provides its students with professional and dedicated academicians, who are committed towards preparing students to excel in their future undertakings.

PROGRAMME DESCRIPTION

The Pre-Spain Programme is a 2 years foundation programme for students who wish to further their studies at Spanish Universities. This Programme is fully sponsored by MARA under “Programme Ijazah Luar Negara (PILN)” especially for selected students who have achieved excellent results in Sijil Pelajaran Malaysia (SPM). This program also opens to private candidate (self-sponsored) who wish to pursue bachelor’s degree in engineering in Spain.

At UniKL MSI, the students need to sit for the GCE International Advance Level Examination EDEXCEL (JCQ: Joint Council for Qualifications) for subjects such as Core Mathematics, Mechanics, Physics and Chemistry. The exam will consist of 2 stages:

i. the Advance Subsidiary Level (AS)
ii. the Advance Level (A2)

Apart from having A-level examination, students are also required to sit for DELE official Spanish examination. This examination will access the students’ Spanish language proficiency. For MARA sponsored students, they are required to pass the DELE examination with B1 level. The main objective of this Programme is to ensure that students are prepared for entry into tertiary education in various fields of engineering technology in Spain.

PROGRAMME STRUCTURE AND DESCRIPTION

Program Educational Objectives (PEOs)

1	To produce students who are **knowledgeable** and **competent** in **Science and Technology**.
2	To produce students who are capable to apply principles **of Science and Technology** in **problem solving**.
3	To produce students who are able to **communicate** effectively verbal and non-verbal either individual or in group.
4	To produce students who are committed to the importance of **lifelong learning** and **continuous improvement**.

Program Learning Outcomes (PLOs)

1	Acquire understanding of facts, concept, principles, process and procedures in science and technology.
2	Apply knowledge of fundamental principles to identify and solve scientific problems.
3	Apply experimental investigations of scientific problems using data from relevant sources individually or in group.
4	Practice effective communication and professionalism, with ethics and social responsibility to support their independent study in Spanish Universities.
5	Competent in obtaining resources and able to engage in independent and lifelong learning.

PROGRAM DESCRIPTOR

Program Code : **JPT/BPP (N/0011/0002) 4/27, MQA PA 15460**
Final Award : **Foundation in Engineering**
Study Duration : **1 year**

Semester 1		
Course Code	Course Name	Credit hours
SSP01103	English 1	3
SSP01204	Mathematics	4
SSP01304	Physics 1	4
SSP01404	Biology 1	4
SSP01504	Chemistry 1	4
SSP01604	Introduction to Management	4
SSP01702	Rakan Masjid 1	2
SSP01802	Integriti & Anti-Rasuah	2
Total Credit Hours		**25**

Semester 2		
Course Code	Course Name	Credit hours
SSP02103	English 2	3
SSP02203	Creative and Critical Thinking	3
SSP02304	Essentials of Economics	4
SSP02403	Basic Information and Communication Technology (ICT)	3
	Elective 1	4
	Elective 2	4
	Elective 3	4
Total Credit Hours		**25**
TOTAL CREDIT TO GRADUATE (TCG)		**50**

Electives Courses		
Course Code	Course Name	Credit hours
SSP03104	Engineering Mathematics	4
SSP03204	Chemistry 2	4
SSP03304	Physics 2	4
SSP03404	Biology 2	4
SSP03504	Introduction to Programming	4
SSP04104	Introduction to Marketing	4
SSP04204	Financial Accounting	4
SSP04304	Introduction to Finance	4
SSP04404	Introduction to Visual Arts	4
SSP04504	Introduction to Mass Media and Communication	4

DIPLOMA PROGRAMME

S01 - DIPLOMA OF ENGINEERING TECHNOLOGY IN MECHANICAL DESIGN AND DEVELOPMENT (DET MDD)

PROGRAMME STRUCTURE AND DESCRIPTION

BACKGROUND

The programme offers the individual with wide knowledge and capabilities in the design for manufacturer of mechanical products, moulds, fixtures and of general parts with an ample knowledge of material and manufacturing.

CAREER INFORMATION

The career openings are wide and rewarding for those with the right education and talent. Job opportunities for a high-level technologist exist in all wide range of industries especially in manufacturing sectors as well as research and development sectors. The person would be able to hold positions such as Assistant Engineer, Senior Technician or Technician Modules.

Program Educational Objectives (PEOs)

1	UniKL graduates who are **knowledgeable** and technically **competent** in the field of **mechanical design and development.**
2	UniKL graduates who are **effective leaders** and **teamwork ski**lls, as well as verbal and non-verbal **interpersonal communication skills** to support their role in the field of mechanical engineering technology
3	UniKL graduates who are committed towards the importance of **lifelong learning** and **continuous improvement.**
4	UniKL graduates who are **professional**, **ethical**, and **socially responsible.**
5	UniKL graduates who are capable of embarking on **business** and **technopreneurial activities**

Program Learning Outcomes (PLOs)

1	***Knowledge***: Apply knowledge of **applied** mathematics, **applied science**, engineering fundamentals and engineering specialisation as specified in DK1 to DK4 respectively to wide practical procedures and practices in **mechanical design and development**.
2	**Problem Analysis**: Identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specific to **mechanical design and development**. (DK1 to DK4)
3	**Design/Development of Solutions**: Design solutions for well-defined technical problems and assist with the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations. (DK5).
4	**Investigation**: Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurement.
5	**Modern Tool Usage**: Apply appropriate techniques, resources, and modern engineering and IT tools to well-defined engineering problems, with an awareness of the limitations. (DK6)
6	**The Engineer and Society**: Demonstrate knowledge of the societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to engineering technician practice and solutions to well-defined engineering problems. (DK7)
7	**Environment and Sustainability**: Understand and evaluate the sustainability and impact of engineering technician work in the solution of well-defined engineering problems in societal and environmental contexts (DK7)
8	**Ethics**: Understand and commit to professional ethics and responsibilities and norms of technician practice.
9	**Individual and Teamwork**: Function effectively as an individual, and as a member in diverse technical teams.
10	**Communication**: Communicate effectively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions.
11	**Project Management and Finance**: Demonstrate knowledge and understanding of engineering management principles and apply these to one's own work, as a member or leader in a technical team and to manage projects in multidisciplinary environments.
12	**Life Long Learning**: Recognise the need for and have the ability to engage in independent updating in the context of **mechanical design and development.**

PROGRAM DESCRIPTOR

Program Code : **JPT/BPP(R2/521/4/0078)06/24,MQA FA 13395**
Final Award : **Diploma of Engineering Technology**
Study Duration : **Min: 3 years, Max: 6 years**

Semester 1			Semester 2		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
WED10402	Competency English	2	MPU2232	Interpersonal Skills	2
WQD10103	Technical Mathematics 1	3	WQD10203	Technical Mathematics 2	3
MPU2182*/ MPU2192*/ MPU2132**	Penghayatan Etika dan Peradaban*/ Falsafah dan Isu Semasa*/ Bahasa Melayu Komunikasi 1**	2	SDD12303	Engineering Mechanics	3
			SMD12103	Conventional Machining	3
			SDD23203	Applied Materials	3
SSD11203	Engineering Science	3	SDD12113	Computer Aided Design	3
SDD12302	Materials Science*	2			
SDD11302	Engineering Drawing	2			
SDD12503	Metrology	3			
SDD11402	Fitting and Welding Fundamentals*	2			
Total Credit Hours		**19**	**Total Credit Hours**		**17**

Semester 3			Semester 4		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
WED20202	Communication English 1	2	WED20302	Communication English 2	2
MPU2312*/ MPU2322*/ MPU2342**	Amalan Islam Di Malaysia*/ Religious Practices in Malaysia*/ Culture & Lifestyle in Malaysia 1**	2	WMD10101/ WSD10101	Mandarin 2/ Spanish 2	1
			MPU24102	Integriti & Anti-Rasuah 1	2
SPD35502	Engineering Ethics	2	SDD24103	Machine Component Design	3
SDD23603	Ergonomics & Human Factors	3	SDD24303	Mechanical Design Process	3
SED12302	Electrotechnics	2	SMD24903	CNC Programming	3
SDD23503	Strength of Materials	3	SED23203	Pneumatic & Hydraulic Systems	3
SRD23703	Internet of Things (IoT) Technology	3			
Total Credit Hours		**17**	**Total Credit Hours**		**17**

Semester 5			Semester 6		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
MPU 2212	Bahasa Kebangsaan (A) *	2	WID41009	Industrial Training	9
WMD10201/ WSD10201	Mandarin 2/ Spanish 2	1			
WBD20203	Introduction to Entrepreneurship	3			
SPD35203	Quality & Continuous Improvement	3			
SPD35102	Industrial Safety & Health	2			
SPD39806	Final Year Project	6			
Total Credit Hours		**15**	**Total Credit Hours**		**9**
TOTAL CREDIT TO GRADUATE (TCG)					**94**

Note:
*****Additional Module**

1. **MPU 2212 Bahasa Kebangsaan A -** For local students without credit in Bahasa Melayu (SPM) only and the credit is not included in program Total Credit to Graduate (TCG).
2. **MPU2132 Bahasa Melayu Komunikasi 1****- For international student only.
3. **MPU 2322 Religious Practices in Malaysia** - For international student only

S03 - DIPLOMA OF ENGINEERING TECHNOLOGY IN PRODUCTION (DET PET)

PROGRAMME STRUCTURE AND DESCRIPTION

BACKGROUND

Produce graduates who have technical knowledge and skills, together with a suitable range of transferable and management skills required to work in a modern manufacturing technology environment upon graduation. Thus, it will provide the graduates with wide knowledge and capabilities in the planning and production control, machine operations in term of preparation, programming and machining. This programme also focuses on practices-oriented education-based which enable students to work independently as manufacturing technologist and provide a strong basis for future career development.

CAREER INFORMATION

Graduates will be able to work in vast engineering and manufacturing sector such as Original Equipment Manufacturers (OEM), Manufacturing, Automotive, Semiconductor, Oil and Gas etc. Career prospects are Technologist in the field of Mechanical Engineering and Design such as Mechanical Engineering Technologist, Mechanical Design Engineering Technologist, Manufacturing Engineering Technologist, Product Mechanical Engineering Technologist, Production Engineering Technologist and Marketing Engineering Technologist.

Program Educational Objectives (PEOs)

1	UniKL graduates who are **knowledgeable** and technically **competent** in the field of **production system.**
2	UniKL graduates who are **effective leaders** and **teamwork ski**lls, as well as verbal and non-verbal **interpersonal communication skills** to support their role in the field of production engineering technology
3	UniKL graduates who are committed towards the importance of **lifelong learning** and **continuous improvement.**
4	UniKL graduates who are **professional**, **ethical**, and **socially responsible.**
5	UniKL graduates who are capable of embarking on **business** and **technopreneurial activities**

Program Learning Outcomes (PLOs)

1	***Knowledge***: Apply knowledge of **applied** mathematics, **applied science**, engineering fundamentals and engineering specialisation as specified in DK1 to DK4 respectively to wide practical procedures and practices in **production engineering technology**.
2	**Problem Analysis**: Identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specific to **production engineering technology**. (DK1 to DK4)
3	**Design/Development of Solutions**: Design solutions for well-defined technical problems and assist with the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations. (DK5).
4	**Investigation**: Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurement.
5	**Modern Tool Usage**: Apply appropriate techniques, resources, and modern engineering and IT tools to well-defined engineering problems, with an awareness of the limitations. (DK6)
6	**The Engineer and Society**: Demonstrate knowledge of the societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to engineering technician practice and solutions to well-defined engineering problems. (DK7)
7	**Environment and Sustainability**: Understand and evaluate the sustainability and impact of engineering technician work in the solution of well-defined engineering problems in societal and environmental contexts (DK7)
8	**Ethics**: Understand and commit to professional ethics and responsibilities and norms of technician practice.
9	**Individual and Teamwork**: Function effectively as an individual, and as a member in diverse technical teams.
10	**Communication**: Communicate effectively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions.
11	**Project Management and Finance**: Demonstrate knowledge and understanding of engineering management principles and apply these to one's own work, as a member or leader in a technical team and to manage projects in multidisciplinary environments.
12	**Life Long Learning**: Recognise the need for and have the ability to engage in independent updating in the context of **production engineering technology**.

PROGRAM DESCRIPTOR

Program Code : **JPT/BPP (R2/521/4/0077) 06/24, MQA A 10151**
Final Award : **Diploma of Engineering Technology**
Study Duration : **Min: 3 years, Max: 6 years**

Semester 1			Semester 2		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
MPU2182*/ MPU2192*/ MPU2132**	Penghayatan Etika dan Peradaban*/ Falsafah dan Isu Semasa*/ Bahasa Melayu Komunikasi 1**	2	MPU2232	Interpersonal Skills	2
			WQD10203	Technical Mathematics 2	3
			SDD12302	Materials Science	2
WED10402	Competency English	2	SMD12103	Conventional Machining	3
WQD10103	Technical Mathematics 1	3	SMD24502	Welding Technology	2
SSD11203	Engineering Science	3	SED12302	Electrotechnics	2
SMD11302	Basic Fitting	2	WBD20203	Introduction to Entrepreneurship	3
SDD11302	Engineering Drawing	2			
SDD12503	Metrology	3			
Total Credit Hours		**17**	**Total Credit Hours**		**17**

Semester 3			Semester 4		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
MPU2312/ MPU2322/ MPU2342	Amalan Islam Di Malaysia/ Religious Practices in Malaysia/ Culture & Lifestyle in Malaysia 1	2	WMD10101/ WSD10101	Mandarin1/ Spanish1	1
			MPU24102	Integriti & Anti-Rasuah 1	2
WED20202	Communication English 1	2	SPD23102	Operations Management	2
SSD20202	Engineering Statistics	2	WED20302	Communication English 2	2
SDD12113	Computer Aided Design	3	SPD24202	Production System Design	2
SMD24803	CNC Lathe	3	SDD23203	Applied Materials	3
SPD23202	Electro Discharge Machine	2	SMD23603	CNC Milling	3
SRD23703	Internet of Things (IoT) Technology	3	SED23203	Pneumatic & Hydraulic Systems	3
Total Credit Hours		**17**	**Total Credit Hours**		**18**

Semester 5			Semester 6		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
MPU 2212	Bahasa Kebangsaan (A) *	2	WID41009	Industrial Training	9
WMD10201 WSD10201	Mandarin 2/ Spanish 2	1			
SPD35402	Inventory Management & Scheduling	2			
SPD35203	Quality & Continuous Improvement	3			
SPD35302	Industrial Safety & Health	2			
SPD35502	Engineering Ethics	2			
SPD39806	Final Year Project	6			
Total Credit Hours		**16**	**Total Credit Hours**		**9**
TOTAL CREDIT TO GRADUATE (TCG)					**94**

Note:
*****Additional Module**

1. **MPU 2212 Bahasa Kebangsaan A -** For local students without credit in Bahasa Melayu (SPM) only and the credit is not included in program Total Credit to Graduate (TCG).
2. **MPU2132 Bahasa Melayu Komunikasi 1****- For international student only.
3. **MPU 2322 Religious Practices in Malaysia** - For international student only

S05 - DIPLOMA OF ENGINEERING TECHNOLOGY IN ELECTROMECHANICAL INSTALLATION AND MAINTENANCE (DET EIM)

PROGRAMME STRUCTURE AND DESCRIPTION

BACKGROUND

UniKL MSI in Electromechanical Installation & Maintenance program bridges this gap with an interdisciplinary approach to problem solving in a design and manufacturing environment where the challenges are both mechanical and electrical. The Diploma of Engineering Technology in Electromechanical Installation & Maintenance programme at UniKL MSI prepares graduates with the technical skills for rewarding careers in their chosen discipline: the application, installation, manufacturing, operation and/or maintenance of electrical/electronic systems. Other than instructing students in the latest electrical and electronic technology, computer application software, laboratory equipment, and the operation of electronic systems, the programme also exposes them to critical thinking skills, analyzing and solving technical problems and the use of information acquisition tools.

CAREER INFORMATION

The career openings are wide and rewarding for those with the right education and talent. Job opportunities for a high-level technologist exist in all wide range of industries especially in manufacturing sectors as well as research and development sectors. The person would be able to hold positions such as Assistant Engineer, Senior Technician or Technician Modules.

Program Educational Objectives (PEOs)

1	UniKL graduates who are **knowledgeable** and technically **competent** in the field of **electromechanical installation and maintenance.**
2	UniKL graduates who are **effective leaders** and **teamwork ski**lls, as well as verbal and non-verbal **interpersonal communication skills** to support their role in the field of electromechanical engineering technology
3	UniKL graduates who are committed towards the importance of **lifelong learning** and **continuous improvement.**
4	UniKL graduates who are **professional**, **ethical**, and **socially responsible.**
5	UniKL graduates who are capable of embarking on **business** and **technopreneurial activities**

Program Learning Outcomes (PLOs)

1	***Knowledge***: Apply knowledge of **applied** mathematics, **applied science**, engineering fundamentals and engineering specialisation as specified in DK1 to DK4 respectively to wide practical procedures and practices in **electromechanical installation and maintenance**.
2	**Problem Analysis**: Identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specific to **electromechanical installation and maintenance**. (DK1 to DK4)
3	**Design/Development of Solutions**: Design solutions for well-defined technical problems and assist with the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations. (DK5).
4	**Investigation**: Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurement.
5	**Modern Tool Usage**: Apply appropriate techniques, resources, and modern engineering and IT tools to well-defined engineering problems, with an awareness of the limitations. (DK6)
6	**The Engineer and Society**: Demonstrate knowledge of the societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to engineering technician practice and solutions to well-defined engineering problems. (DK7)
7	**Environment and Sustainability**: Understand and evaluate the sustainability and impact of engineering technician work in the solution of well-defined engineering problems in societal and environmental contexts (DK7)
8	**Ethics**: Understand and commit to professional ethics and responsibilities and norms of technician practice.
9	**Individual and Teamwork**: Function effectively as an individual, and as a member in diverse technical teams.
10	**Communication**: Communicate effectively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions.
11	**Project Management and Finance**: Demonstrate knowledge and understanding of engineering management principles and apply these to one's own work, as a member or leader in a technical team and to manage projects in multidisciplinary environments.
12	**Lifelong Learning**: Recognise the need for and have the ability to engage in independent updating in the context of **electromechanical installation and maintenance**.

PROGRAM DESCRIPTOR

Program Code : **JPT/BPP(R2/521/4/0067)06/24,MQA FA 13396**
Final Award : **Diploma of Engineering Technology**
Study Duration : **Min: 3 years, Max: 6 years**

Semester 1			Semester 2		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
MPU2182*/ MPU2192*/ MPU2132**	Penghayatan Etika dan Peradaban*/ Falsafah dan Isu Semasa*/ Bahasa Melayu Komunikasi 1**	2	MPU2312*/ MPU2322*/ MPU2342**	Amalan Islam Di Malaysia*/ Religious Practices in Malaysia*/ Culture & Lifestyle in Malaysia 1**	2
WED10402	Competency English	2	MPU2232	Interpersonal Skills	2
WQD10103	Technical Mathematics 1	3	WBD20203	Introduction to Entrepreneurship	3
SSD11203	Engineering Science	3	WQD10203	Technical Mathematics 2	3
SRD11403	Electrical Technology	3	SRD12102	Electronics Devices	2
SDD11203	Engineering Drawing & CAD	3	SED12013	Electrotechnology	3
			SRD12603	Industrial Computing	3
Total Credit Hours		**16**	**Total Credit Hours**		**18**

Semester 3			Semester 4		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
WED20202	Communication English 1	2	WMD10101/ WSD10101	Mandarin1 / Spanish1	1
SMD24502	Welding Technology	2			
SRD25103	Control Systems	3	MPU24102	Integriti & Anti-Rasuah 1	2
SPD35502	Engineering Ethics	2	WED20302	Communication English 2	2
SED23203	Pneumatic & Hydraulic Systems	3	SED24103	Industrial Automation	3
SRD23703	Internet of Things (IoT) Technology	3	SRD23503	Electrical Machines	3
			SDD23703	Industrial Mechanics and Maintenance	3
Total Credit Hours		**15**	**Total Credit Hours**		**17**

Semester 5			Semester 6		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
MPU 2213	Bahasa Kebangsaan (A) *	3	WID41009	Industrial Training	9
WMD10201 WSD10201	Mandarin 2/ Spanish 2	1			
SRD35203	Power Electronics & Drive	3			
SRD35603	Electronics Instrumentation	3			
SPD35203	Quality & Continuous Improvement	3			
SPD39806	Final Year Project	6			
Total Credit Hours		**16**	**Total Credit Hours**		**9**
TOTAL CREDIT TO GRADUATE (TCG)					**91**

Note:

*****Additional Module**

1. **MPU 2212 Bahasa Kebangsaan A -** For local students without credit in Bahasa Melayu (SPM) only and the credit is not included in program Total Credit to Graduate (TCG).
2. **MPU2132 Bahasa Melayu Komunikasi 1****- For international student only.
3. **MPU 2322 Religious Practices in Malaysia** - For international student only

S06 - DIPLOMA OF ELECTRONIC ENGINEERING TECHNOLOGY (INDUSTRIAL AUTOMATION AND CONTROL) (DEET IAC)

PROGRAMME STRUCTURE AND DESCRIPTION

BACKGROUND

The programme offers the individual with wide knowledge and capabilities in current distribution installation, control programs of electro technical automation equipment, control and regulation system of machines or industrial processes.

CAREER INFORMATION

The career openings are wide and rewarding for those with right education and talent job opportunities for a high-level technologist exist in all industrial companies that operate in an automation system. The person would be able to hold positions such as Assistant Engineer, Senior Technician or Technician.

Program Educational Objectives (PEOs)

1	UniKL graduates who are **knowledgeable** and technically **competent** in the field of **electronics, automation and control**
2	UniKL graduates who are **effective leaders** and **teamwork ski**lls, as well as verbal and non-verbal **interpersonal communication skills** to support their role in the field of electronics, automation and control engineering technology
3	UniKL graduates who are committed towards the importance of **lifelong learning** and **continuous improvement.**
4	UniKL graduates who are **professional**, **ethical**, and **socially responsible.**
5	UniKL graduates who are capable of embarking on **business** and **technopreneurial activities**

Program Learning Outcomes (PLOs)

1	***Knowledge***: Apply knowledge of **applied** mathematics, **applied science**, engineering fundamentals and engineering specialisation as specified in DK1 to DK4 respectively to wide practical procedures and practices in **electronics, automation and control**.
2	**Problem Analysis**: Identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specific to **electronics, automation and control** (DK1 to DK4)
3	**Design/Development of Solutions**: Design solutions for well-defined technical problems and assist with the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations. (DK5).
4	**Investigation**: Conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurement.
5	**Modern Tool Usage**: Apply appropriate techniques, resources, and modern engineering and IT tools to well-defined engineering problems, with an awareness of the limitations. (DK6)
6	**The Engineer and Society**: Demonstrate knowledge of the societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to engineering technician practice and solutions to well-defined engineering problems. (DK7)
7	**Environment and Sustainability**: Understand and evaluate the sustainability and impact of engineering technician work in the solution of well-defined engineering problems in societal and environmental contexts (DK7)
8	**Ethics**: Understand and commit to professional ethics and responsibilities and norms of technician practice.
9	**Individual and Teamwork**: Function effectively as an individual, and as a member in diverse technical teams.
10	**Communication**: Communicate effectively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions.
11	**Project Management and Finance**: Demonstrate knowledge and understanding of engineering management principles and apply these to one's own work, as a member or leader in a technical team and to manage projects in multidisciplinary environments.
12	**Life Long Learning**: Recognise the need for and have the ability to engage in independent updating in the context of specialised technical knowledge.

PROGRAM DESCRIPTOR

Program Code : **JPT/BPP (R2/523/4/0195) 06/24, MQA FA 13668**
Final Award : **Diploma of Engineering Technology**
Study Duration : **Min: 3 years, Max: 6 years**

Semester 1			Semester 2		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
MPU2182*/ MPU2192*/ MPU2132**	Penghayatan Etika dan Peradaban*/ Falsafah dan Isu Semasa*/ Bahasa Melayu Komunikasi 1**	2	MPU2312*/ MPU2322*/ MPU2342**	Amalan Islam Di Malaysia*/ Religious Practices in Malaysia*/ Culture & Lifestyle in Malaysia 1**	2
WED10402	Competency English	2	MPU2232	Interpersonal Skills	2
WQD10103	Technical Mathematics 1	3	WQD10203	Technical Mathematics 2	3
SRD11403	Electrical Technology	3	WBD20203	Introduction to Entrepreneurship	3
SSD11203	Engineering Science	3	SRD12102	Electronics Devices	2
SDD11203	Engineering Drawing & CAD	3	SRD12603	Industrial Computing	3
			SED12013	Electrotechnology	3
Total Credit Hours		**16**	**Total Credit Hours**		**18**

Semester 3			Semester 4		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
WED20202	Communication English 1	2	WMD10101/	Mandarin1 /	1
SED23203	Pneumatic & Hydraulic Systems	3	WSD10101	Spanish1	
SRD23103	Digital Electronics	3	MPU24102	Integriti & Anti-Rasuah 1	2
SRD25103	Control Systems	3	WED20302	Communication English 2	2
SPD35502	Engineering Ethics	2	SED24103	Industrial Automation	3
SRD23703	Internet of Things (IoT) Technology	3	SRD23503	Electrical Machines	3
WED20202	Communication English 1	2	SRD23303	Electronics Circuit Design	3
			SRD25303	Microcontroller	3
Total Credit Hours		**15**	**Total Credit Hours**		**17**

Semester 5			Semester 6		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
MPU 2213	Bahasa Kebangsaan (A) *	3	WID41009	Industrial Training	9
WMD10201/ WSD10201	Mandarin 2/ Spanish 2	1			
SPD35203	Quality & Continuous Improvement	3			
SRD35203	Power Electronics and Drive	3			
SRD35603	Electronics Instrumentation	3			
SPD39806	Final Year Project	6			
Total Credit Hours		**16**	**Total Credit Hours**		**9**
TOTAL CREDIT TO GRADUATE (TCG)					**92**

Note:
*****Additional Module**

1. **MPU 2212 Bahasa Kebangsaan A -** For local students without credit in Bahasa Melayu (SPM) only and the credit is not included in program Total Credit to Graduate (TCG).
2. **MPU2132 Bahasa Melayu Komunikasi 1****- For international student only.
3. **MPU 2322 Religious Practices in Malaysia** - For international student only

BACHELOR PROGRAMME

S11 - BACHELOR OF ENGINEERING TECHNOLOGY (HONS) IN MECHANICAL (AUTOMOTIVE) (BETA MECHANICAL)

PROGRAMME STRUCTURE AND DESCRIPTION

BACKGROUND

This programme is a combination of mechanical and automotive engineering. Mechanical engineering is an engineering discipline that involves the application of principles of physics for analysis, design, manufacturing, and maintenance of mechanical systems. During the study, students will be given a solid understanding of key concepts including:

- Static and dynamics
- Strength of materials and solid mechanics
- Instrumentation and measurement
- Automotive engineering
- Thermodynamics, heat transfer, energy conversion & refrigeration/air conditioning
- Fluid mechanics/fluid dynamics
- Mechanism design (including kinematics and dynamics)
- Manufacturing technology or processes
- Hydraulics and Pneumatics
- Engineering Design
- Mechatronics and/or control theory
- Drafting, CAD (usually including solid modeling), and CAM

CAREER INFORMATION

Mechanical engineers provide efficient solutions to the development of processes and products, ranging from small component designs to extremely large plant, machinery, or vehicles. They can work on all stages of a product, from research and development to design and manufacture, through to installation and final commissioning. Most industries rely on a form of mechanical systems and mechanical engineering is thought to be one of the most diverse of all engineering disciplines. There are employment opportunities available in a wide range of sectors, such as the manufacturing, automotive and industrial engineering. Mechanical engineers can also be involved in the management of people and resources, as well as the development and use of new materials and technologies.

Program Educational Objectives (PEOs)

1	UniKL graduates who are highly **knowledgeable** and **technically competent** in the field of **mechanical and automotive**
2	UniKL graduates who are **effective leaders** with **teamwork skills**, as well as verbal and non-verbal **interpersonal communication skills** to support their role in the field of **mechanical and automotive engineering technology**
3	UniKL graduates who are committed towards the importance of **lifelong learning** and **continuous improvement.**
4	UniKL graduates who are **professional**, **ethical**, and **socially responsible.**
5	UniKL graduates who are capable of embarking on **business** and **technopreneurial activities**

Program Learning Outcomes (PLOs)

1	**Knowledge:** Apply knowledge of mathematics, science, mechanical engineering fundamentals and automotive fundamentals to define and applied engineering procedures, process, systems or methodologies.
2	**Problem Analysis:** Identify, formulate, research literature, modelling, simulate and solve broadly defined engineering problems reaching substantiated conclusions using appropriate analytical tools related to mechanical and automotive engineering technology
3	**Design/ development of solutions:** Design solutions for broadly defined engineering technology problems and contribute to the design of systems, components or process to meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations.
4	**Investigation:** Conduct investigations of broadly defined problems: locate, search and select relevant data from codes, data bases and literature, design and conduct experiments to provide valid conclusion.
5	**Modern Tool Usage:** Select and apply appropriate techniques, resources and modern engineering tools, including prediction and modelling to broadly-defined engineering activities, with an understanding of the limitations.
6	**The Engineer and Society:** Demonstrate understanding of the societal, health, safety, legal and cultural issues and the consequent responsibilities and norms of engineering technology practice.
7	**Environment and Sustainability:** Understand the impact of engineering solutions in a societal context and demonstrate knowledge of and the need for sustainable development.
8	**Ethics:** Understand and commit to professional ethics and responsibilities and norms of engineering technology practice.
9	**Individual and Teamwork**: Function effectively as an individual, and as a member in diverse technical teams.
10	**Communication**: Communicate effectively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions.
11	**Project Management and Finance**: Demonstrate knowledge and understanding of engineering management principles and apply these to one's own work, as a member or leader in a technical team and to manage projects in multidisciplinary environments.
12	**Life Long Learning**: Recognise the need for and have the ability to engage in independent updating in the context of specialised technical knowledge.

PROGRAM DESCRIPTOR

Program Code : **JPT/BPP(R/521/6/0126) 06/27, MQA FA 7648**
Final Award : **Bachelor of Engineering Technology**
Study Duration : **Min: 4 years, Max: 8 years**

Semester 1			Semester 2		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
MPU3182/ MPU3192	Penghayatan Etika dan Peradaban**/ Philosophy and Current Issues**	2	SCB12103	Engineering Mechanics	3
			STB24303	Computer Programming	3
MPU3192/ MPU3142	Falsafah dan Isu Semasa**/ Bahasa Melayu Komunikasi 2**	2	STB12203	Electric Circuit Analysis	3
			STB12202	Electrical & Electronics Laboratories	2
SSB10103	Engineering Mathematics 1	3	SSB10203	Engineering Mathematics 2	3
WEB10302	Fundamental English	2	SFB12102	Workshop Technology	2
WEB20202	Professional English 1	2	SDB12203	Engineering Drawing & CAD	3
SCB23302	Fundamentals of Materials Science	2			
SCB12402	Automotive Engineering Fundamentals	2			
Total Credit Hours		**15**	**Total Credit Hours**		**19**

Semester 3			Semester 4		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
MPU3332/	Isu-isu Kontemporari Muslim di Malaysia**/	2	MPU34102	Integrity & Anti- Rasuah 2	2
MPU3342	Culture and Lifestyle in Malaysia 2***		SCB35603	Machine Component Design	3
MPU3242	Innovation Management	2	SCB24603	Fluid Mechanics	3
SFB36102	Automotive Safety	2	SCB24803	Automotive Power Train	3
SCB23103	Strength of Materials	3	SCB24403	Finite Element Application	3
SCB23603	Thermal Science	3	SCB24503	Engineering Materials	3
SCB24703	Chassis and Vehicle Dynamics	3	STB36403	Internet of Things (IoT) Technology	3
SFB23102	Production Planning	2			
Total Credit Hours		**17**	**Total Credit Hours**		**20**

Semester 5			Semester 6		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
WEB20302	Professional English 2	2	WMD10101/ WSD10101	Mandarin1 / Spanish1	1
WBB20103	Technopreneurship	3			
SCB37703	Heat Transfer & Thermal Management	3	SCB35403	Vibration and Noise	3
SCB35503	Internal Combustion Engine	3	SCB36103	Automotive Design Engineering	3
STB35603	Pneumatic & Hydraulic Systems	3	SFB36202	Industrial Safety & Health	2
SDB35203	Metrology	3	SCB36203	Automotive Structure	3
SFB23202	Professional Engineering Practice and Ethics	2	SPB49804	Final Year Project 1	4
				Elective 1*	3
Total Credit Hours		**19**	**Total Credit Hours**		**19**

Semester 7			Semester 8		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
MPU3212	Bahasa Kebangsaan A*	2	WIB41012	Industrial Training	12
WMD1020/ WSD10201	Mandarin 2/ Spanish 2	1			
STB35703	Automotive Electrical & Electronic Systems	3			
SFB47703	Quality Engineering	3			
SPB49906	Final Year Project 2	6			
	Elective 2*	3			
	Elective 3*	3			
Total Credit Hours		**19**	**Total Credit Hours**		**12**
TOTAL CREDIT TO GRADUATE (TCG)					**140**

Note:
*****Additional Module**

1. **MPU 3212 Bahasa Kebangsaan A** - For local students without credit in Bahasa Melayu (SPM) only and the credit is not included in program Total Credit to Graduate (TCG).
2. **MPU 3142 Bahasa Melayu Komunikasi 2** - For international student only.
3. **MPU 3342 Culture and Lifestyle in Malaysia 2** - For international student & Local non-Muslim only

Electives Courses		
Course Code	Course Name	Credit hours
SFB47113	Design of Experiments	3
SFB47303	CAD/CAM Rapid Prototyping	3
SDB23403	Ergonomics and Human Factors	3
SMB48503	Smart Manufacturing	3
SDB24103	Design For Plastic & Elastomer	3
SDB47403	Applied Computational Fluid Dynamics	3

S22 - BACHELOR OF MECHATRONICS ENGINEERING TECHNOLOGY (AUTOMOTIVE) WITH HONOURS (BETA MECHATRONICS)

PROGRAMME STRUCTURE AND DESCRIPTION

BACKGROUND

The mechatronics concept established basic principles for a contemporary engineering design methodology. In this methodology, engineering products and processes have components that require manipulation and control of dynamic (moving) construction to the required high degree of accuracy. Also, the design process requires integrating enabling technologies such as information technology and control engineering. A key factor for the design process involves integrating modern microelectronics and the engineering of software into mechanical and electromechanical systems. This programme is a combination of electrical engineering and automotive engineering. During the study, students will be given a solid understanding of the core areas which include:

- Electric and electronic circuits
- Computer programming
- Control system theory
- Automotive electric and electronic system
- Electronics instrument and measurement technology
- Microcontroller interfacing
- Digital signals processing
- Power Electronics and drive
- Hybrid vehicle system
- Automotive engineering

CAREER INFORMATION

Mechatronics graduates are in great demand as industries seek to apply for evolutionary advances in computers, electronics, sensors, and actuators to improve their products, processes, and services. Graduates are in demand wherever there is potential for improvement in the integration of computer and electrical hardware with mechanical systems. Mechatronics graduates can work in any company that develops designs or manufactures and markets “smart” devices. Opportunities exist in manufacturing, sales and as well as research. Mechatronic devices have crept into everyday life.

Program Educational Objectives (PEOs)

1	UniKL graduates who are **knowledgeable** and technically **competent** in the field of **mechatronics and automotive**
2	UniKL graduates who are **effective leaders** and **teamwork ski**lls, as well as verbal and non-verbal **interpersonal communication skills** to support their role in the field of mechatronics and **automotive engineering technology**.
3	UniKL graduates who are committed towards the importance of **lifelong learning** and **continuous improvement.**
4	UniKL graduates who are **professional**, **ethical**, and **socially responsible.**
5	UniKL graduates who are capable of embarking on **business** and **technopreneurial activities**

Program Learning Outcomes (PLOs)

1	**Knowledge:** Apply knowledge of mathematics, science, mechatronics engineering fundamentals and automotive fundamentals to define and applied engineering procedures, process, systems or methodologies.
2	**Problem Analysis: I**dentify, formulate, research literature, modelling, simulate and solve broadly-defined engineering problems reaching substantiated conclusions using appropriate analytical tools related to mechatronics and automotive engineering technology.
3	**Design/ development of solutions:** Design solutions for broadly defined engineering technology problems and contribute to the design of systems, components or process to meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations.
4	**Investigation:** Conduct investigations of broadly defined problems: locate, search and select relevant data from codes, data bases and literature, design and conduct experiments to provide valid conclusion.
5	**Modern Tool Usage:** Select and apply appropriate techniques, resources and modern engineering tools, including prediction and modelling to broadly-defined engineering activities, with an understanding of the limitations.
6	**The Engineer and Society:** Demonstrate understanding of the societal, health, safety, legal and cultural issues and the consequent responsibilities and norms of engineering technology practice.
7	**Environment and Sustainability:** Understand the impact of engineering solutions in a societal context and demonstrate knowledge of and the need for sustainable development.
8	**Ethics:** Understand and commit to professional ethics and responsibilities and norms of engineering technology practice.
9	**Individual and Teamwork**: Function effectively as an individual, and as a member in diverse technical teams.
10	**Communication**: Communicate effectively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions.
11	**Project Management and Finance**: Demonstrate knowledge and understanding of engineering management principles and apply these to one's own work, as a member or leader in a technical team and to manage projects in multidisciplinary environments.
12	**Life Long Learning**: Recognise the need for and have the ability to engage in independent updating in the context of specialised technical knowledge.

PROGRAM DESCRIPTOR

Program Code : **JPT/BPP (R3/525/6/0067) 09/29, MQA FA11196**
Final Award : **Bachelor of Engineering Technology**
Study Duration : **Min: 4 years, Max: 8 years**

Semester 1			Semester 2		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
MPU3192/	Falsafah dan Isu Semasa**/	2	SCB12103	Engineering Mechanics	3
MPU3142	Bahasa Melayu Komunikasi 2**		SDB12203	Engineering Drawing & CAD	3
MPU3182/	Penghayatan Etika dan Peradaban**/	2	SAB24102	Sensor Technology	3
MPU3172	Philosophy and Current Issues**		STB12202	Electrical & Electronics Laboratories	2
WEB10302	Fundamental English	2	SFB12102	Workshop Technology	2
WEB20202	Professional English 1	2	STB12203	Electric Circuit Analysis	3
SSB10103	Engineering Mathematics 1	3	SSB10203	Engineering Mathematics 2	3
SCB12402	Automotive Engineering Fundamentals	2			
SCB23302	Fundamentals of Materials Science	2			
Total Credit Hours		**15**	**Total Credit Hours**		**19**

Semester 3			Semester 4		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
MPU3332/	Isu-isu Kontemporari Muslim di Malaysia***	2	MPU 34102	Integrity & Anti- Rasuah 2	2
MPU3342	Culture and Lifestyle in Malaysia 2***		WEB20302	Professional English 2	2
MPU3242	Innovation Management	2	SCB24803	Automotive Power Train	3
SCB24703	Chassis and Vehicle Dynamics	3	SCB24603	Fluid Mechanics	3
SCB23603	Thermal Science	3	STB35603	Pneumatic & Hydraulic Systems	3
STB24303	Computer Programming	3	STB24403	Digital Electronics	3
SAB24203	Signals and Systems	3	STB36403	Internet of Things (IoT) Technology	3
Total Credit Hours		**17**	**Total Credit Hours**		**20**

Semester 5			Semester 6		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
SFB23202	Professional Engineering Practice and Ethics	2	WMD10101/	Mandarin1 /	1
SCB35503	Internal Combustion Engine	3	WSD10101	Spanish1	
WBB20103	Technopreneurship	3	SFB36202	Industrial Safety & Health	2
STB35803	Electric Machine Fundamentals	3	STB36703	Mechatronics Design Projects	3
STB35903	Microcontroller and Interfacing	3	STB36603	Electronic Instrumentation	3
STB35503	Control Systems	3	STB36303	Power Electronics and Drives	3
STB35703	Automotive Electrical & Electronic Systems	3	STB47703	Machine Vision ** (Elective 1)	3
SFB23202	Professional Engineering Practice and Ethics	2	SPB49804	Final Year Project 1	4
Total Credit Hours		**19**	**Total Credit Hours**		**19**

Semester 7			Semester 8		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
MPU3213	Bahasa Kebangsaan A*	3	WIB41012	Industrial Training	12
WMD1020/ WSD10201	Mandarin 2/ Spanish 2	1			
STB47123	Industrial Automation	3			
SFB47703	Quality Engineering	3			
SPB49906	Final Year Project 2	6			
STB47503	(Elective 2)	3			
STB47103	(Elective 3)	3			
Total Credit Hours		**19**	**Total Credit Hours**		**12**
TOTAL CREDIT TO GRADUATE (TCG)					**140**

Note:
*****Additional Module**

1. **MPU 3212 Bahasa Kebangsaan A** - For local students without credit in Bahasa Melayu (SPM) only and the credit is not included in program Total Credit to Graduate (TCG).
2. **MPU 3142 Bahasa Melayu Komunikasi 2** - For international student only.
3. **MPU 3342 Culture and Lifestyle in Malaysia 2** - For international student & Local non-Muslim only

Electives Courses		
Course Code	Course Name	Credit hours
STB47703	Machine Vision	3
STB47103	Digital Signal Processing	3
STB47803	Introduction to Robotics	3
STB47503	Artificial Intelligence	3
SAB36703	Digital Control System	3
STB36503	Electric Vehicle Charging Infrastructure	3
STB47903	Diagnosis of Electric and Hybrid Vehicles	3

S13 - BACHELOR OF ENGINEERING TECHNOLOGY (HONS) IN MANUFACTURING (AUTOMOTIVE) (BETA MANUFACTURING)

PROGRAMME STRUCTURE AND DESCRIPTION

BACKGROUND

All products from aircraft and automobiles to computers and toys must be manufactured. Manufacturing engineering encompasses the science and art of making quality products at a reasonable cost. It is multi-disciplinary field including elements of mechanical engineering, industrial engineering, materials science and electrical engineering. This programme is a combination of manufacturing engineering and automotive engineering. During the study, the student will be given a solid understanding of the core areas which include:

- Manufacturing processes
- Manufacturing planning
- Quality control
- Tool design
- Robotics
- Computer Aided Design
- Computer Aided Manufacturing
- Automotive engineering

CAREER INFORMATION

Manufacturing jobs cover nearly everything involved in developing a product, from selecting the appropriate materials to choosing the correct machinery to manufacture the product. Most manufacturing engineers work for equipment manufacturers, aerospace companies, utilities, material processing plants, transportation companies, and petroleum companies. They also work with small firms, consulting practices, universities, and government research labs. Specific assignments might involve research and development, the design of equipment or systems, supervision of production, plant engineering, administration, sales engineering, the testing and evaluation of machines and entire plants.

Program Educational Objectives (PEOs)

1	UniKL graduates who are **knowledgeable** and technically **competent** in the field of **manufacturing and automotive**.
2	UniKL graduates who are **effective leaders** and **teamwork skills**, as well as verbal and non-verbal **interpersonal communication skills** to support their role in the field of manufacturing and automotive engineering technology.
3	UniKL graduates who are committed towards the importance of **lifelong learning** and **continuous improvement.**
4	UniKL graduates who are **professional**, **ethical**, and **socially responsible.**
5	UniKL graduates who are capable of embarking on **business** and **technopreneurial activities**

Program Learning Outcomes (PLOs)

1	**Knowledge:** Apply knowledge of mathematics, science, manufacturing engineering fundamentals and automotive fundamentals to define and applied engineering procedures, process, systems or methodologies.
2	**Problem Analysis:** Identify, formulate, research literature, modelling, simulate and solve broadly defined engineering problems reaching substantiated conclusions using appropriate analytical tools related to manufacturing and automotive engineering technology.
3	**Design/ development of solutions:** Design solutions for broadly defined engineering technology problems and contribute to the design of systems, components or process to meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations.
4	**Investigation:** Conduct investigations of broadly defined problems: locate, search and select relevant data from codes, data bases and literature, design and conduct experiments to provide valid conclusion.
5	**Modern Tool Usage:** Select and apply appropriate techniques, resources and modern engineering tools, including prediction and modelling to broadly-defined engineering activities, with an understanding of the limitations.
6	**The Engineer and Society:** Demonstrate understanding of the societal, health, safety, legal and cultural issues and the consequent responsibilities and norms of engineering technology practice.
7	**Environment and Sustainability:** Understand the impact of engineering solutions in a societal context and demonstrate knowledge of and the need for sustainable development.
8	**Ethics:** Understand and commit to professional ethics and responsibilities and norms of engineering technology practice.
9	**Individual and Teamwork**: Function effectively as an individual, and as a member in diverse technical teams.
10	**Communication**: Communicate effectively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions.
11	**Project Management and Finance**: Demonstrate knowledge and understanding of engineering management principles and apply these to one's own work, as a member or leader in a technical team and to manage projects in multidisciplinary environments.
12	**Life Long Learning**: Recognise the need for and have the ability to engage in independent updating in the context of specialised technical knowledge.

PROGRAM DESCRIPTOR

Program Code : **JPT/BPP (R3/525/6/0068) 09/29, MQA FA 13398**
Final Award : **Bachelor of Engineering Technology**
Study Duration : **Min: 4 years, Max: 8 years**

Semester 1			Semester 2		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
MPU3192/ MPU3142	Falsafah dan Isu Semasa**/ Bahasa Melayu Komunikasi 2**	2	SCB12103	Engineering Mechanics	3
			SSB10203	Engineering Mathematics 2	3
MPU3182/ MPU3172	Penghayatan Etika dan Peradaban**/ Pengajian Malaysia 3**	2	SDB12203	Engineering Drawing & CAD	3
			STB24303	Computer Programming	3
WEB10302	Fundamental English	2	STB12202	Electrical & Electronics Laboratories	2
WEB20202	Professional English 1	2	SFB12102	Workshop Technology	2
SSB10103	Engineering Mathematics 1	3	STB12203	Electric Circuit Analysis	3
SCB12402	Automotive Engineering Fundamentals	2			
SCB23302	Fundamentals of Materials Science	2			
Total Credit Hours		**15**	**Total Credit Hours**		**19**

Semester 3			Semester 4		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
MPU3332/ MPU3342	Isu-isu Kontemporari Muslim di Malaysia*/ Culture and Lifestyle in Malaysia 2**	2	MPU 34102	Integrity & Anti- Rasuah 2	2
			SDB35203	Metrology	3
MPU3242	Innovation Management	2	SCB24603	Fluid Mechanics	3
SFB36102	Automotive Safety	2	SCB24703	Chassis and Vehicle Dynamics	3
SCB23103	Strength of Materials	3	SCB24803	Automotive Power Train	3
SFB36403	Operation Research	3	SDB24103	Design for Plastics and Elastomer	3
SCB23603	Thermal Science	3	SCB24503	Engineering Materials	3
SFB23102	Production Planning	2			
Total Credit Hours		**17**	**Total Credit Hours**		**20**

Semester 5			Semester 6		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
WBB20103	Technopreneurship	3	WMD10101/ WSD10101	Mandarin1 / Spanish1	1
WEB20302	Professional English 2	2			
SDB35103	Design for Sheet Metal Forming	3	STB35603	Pneumatic & Hydraulic Systems	3
SFB23202	Professional Engineering Practice and Ethics	2	SFB36303	CNC Technology	3
SFB35103	Manufacturing Technology	3	STB36403	Internet of Things (IoT) Technology	3
SFB35203	Manufacturing System	3	SFB36202	Industrial Safety & Health	2
SFB36503	Smart Manufacturing	3	SPB49804	Final Year Project 1	4
				Elective 1*	3
Total Credit Hours		**19**	**Total Credit Hours**		**19**

Semester 7			Semester 8		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
MPU2212	Bahasa Kebangsaan A*	3	WIB41012	Industrial Training	12
WMD10201 WSD10201	Mandarin 2/ Spanish 2	1			
SFB47303	CAD/CAM Rapid Prototyping	3			
SFB47703	Quality Engineering	3			
SPB49906	Final Year Project 2	6			
	Elective 2	3			
	Elective 3	3			
Total Credit Hours		**19**	**Total Credit Hours**		**12**
TOTAL CREDIT TO GRADUATE (TCG)					**140**

Note:
*****Additional Module**

1. **MPU 3212 Bahasa Kebangsaan A** - For local students without credit in Bahasa Melayu (SPM) only and the credit is not included in program Total Credit to Graduate (TCG).
2. **MPU 3142 Bahasa Melayu Komunikasi 2** - For international student only.
3. **MPU 3342 Culture and Lifestyle in Malaysia 2** - For international student & Local non-Muslim only

Electives Courses		
Course Code	Course Name	Credit hours
SFB47113	Design of Experiments	3
SDB47403	Applied Computational Fluid Dynamics	3
SCB37703	Heat Transfer & Thermal Management	3
SDB23403	Ergonomics & Human Factors	3
SCB35403	Vibration and Noise	3

S14 - BACHELOR OF ENGINEERING TECHNOLOGY (HONS) IN MECHANICAL DESIGN (BET MD)

PROGRAMME STRUCTURE AND DESCRIPTION

BACKGROUND

Bachelor of Engineering Technology (Hons) in Mechanical Design (BET MD) aims to assist graduates to become full fledge Mechanical Design Technologist with the required knowledge and technical skills to serve the industry upon graduating. Besides Mechanical Engineering knowledge, students also will have the advantage of specializing in Mechanical Design. Emphasize will be given on components and systems level design to serve the mechanical, manufacturing, semiconductor, electronics, and also oil and gas industry. Students will be exposed on the required knowledge and skills to produce detail Engineering Design that complies with Engineering Standards on safety, reliability and also environment impact. They will also learn to create design which is highly manufactured able and save cost. At early stage of the programme, courses are aligned to expose the students to the basic Mechanical / Manufacturing knowledge. In the middle of the programme students will learn Specialized Design Courses which are relevant to the industry.

CAREER INFORMATION

Graduates will be able to work in vast engineering and manufacturing sector such as Original Equipment Manufacturers (OEM), Manufacturing, Automotive, Semiconductor, Oil and Gas etc. Career prospects are Technologist in the field of Mechanical Engineering and Design such as Mechanical Engineering Technologist, Mechanical Design Engineering Technologist, Manufacturing Engineering Technologist, Product Mechanical Engineering Technologist, Production Engineering Technologist and Marketing Engineering Technologist.

Program Educational Objectives (PEOs)

1	UniKL graduates who are **knowledgeable**, **competent**, and **innovative** in the field of **mechanical design.**
2	UniKL graduates who are **effective leaders** with **teamwork skills**, as well as verbal and non-verbal interpersonal communication skills to support their role in the field of **mechanical design engineering technology**
3	UniKL graduates who are committed towards the importance of **lifelong learning** and **continuous improvement.**
4	UniKL graduates who are **professional**, **ethical**, and **socially responsible.**
5	UniKL graduates who are capable of embarking on **business** and **technopreneurial activities**

Program Learning Outcomes (PLOs)

1	**Knowledge:** Acquire and apply the knowledge of mechanical engineering design and technology in design and development of products, components or systems.
2	**Problem Analysis:** Identify, evaluate and propose new design concepts which are feasible, optimum, solve the design needs and also suitable for manufacturing.
3	**Design/ development of solutions:** Design solutions for broadly defined engineering technology problems and contribute to the design of systems, components or process to meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations.
4	**Investigation:** Conduct investigations of broadly defined problems: locate, search and select relevant data from codes, data bases and literature, design and conduct experiments to provide valid conclusion.
5	**Modern Tool Usage:** Select and apply appropriate techniques, resources and modern engineering tools, including prediction and modelling to broadly-defined engineering activities, with an understanding of the limitations.
6	**The Engineer and Society:** Demonstrate understanding of the societal, health, safety, legal and cultural issues and the consequent responsibilities and norms of engineering technology practice.
7	**Environment and Sustainability:** Understand the impact of engineering solutions in a societal context and demonstrate knowledge of and the need for sustainable development.
8	**Ethics:** Understand and commit to professional ethics and responsibilities and norms of engineering technology practice.
9	**Individual and Teamwork**: Function effectively as an individual, and as a member in diverse technical teams.
10	**Communication**: Communicate effectively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions.
11	**Project Management and Finance**: Demonstrate knowledge and understanding of engineering management principles and apply these to one's own work, as a member or leader in a technical team and to manage projects in multidisciplinary environments.
12	**Life Long Learning**: Recognise the need for and have the ability to engage in independent updating in the context of specialised technical knowledge.

PROGRAM DESCRIPTOR

Program Code : **JPT/BPP(R/521/6/0126) 06/27, MQA FA 7648**
Final Award : **Bachelor of Engineering Technology**
Study Duration : **Min: 4 years, Max: 8 years**

Semester 1			Semester 2		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
MPU3192/ MPU3142	Falsafah dan Isu Semasa**/ Bahasa Melayu Komunikasi 2**	2	SCB12103	Engineering Mechanics	3
			SSB10203	Engineering Mathematics 2	3
MPU3182/ MPU3192	Penghayatan Etika dan Peradaban**/ Philosophy and Current Issues**	2	SDB24303	Engineering Design Process	3
			SFB35103	Manufacturing Technology	3
MPU3332/ MPU3342	Isu-isu Kontemporari Muslim di Malaysia*/ Culture and Lifestyle in Malaysia 2**	2	STB12202	Electrical & Electronics Laboratories	2
			SFB12102	Workshop Technology	2
WEB10302	Fundamental English	2	STB12203	Electric Circuit Analysis	3
WEB20202	Professional English 1	2			
SSB10103	Engineering Mathematics 1	3			
SDB12203	Engineering Drawing & CAD	3			
Total Credit Hours		**16**	**Total Credit Hours**		**19**

Semester 3			Semester 4		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
MPU34102	Integrity & Anti- Rasuah 2	2	SCB35603	Machine Component Design	3
MPU3242	Innovation Management	2	SCB23603	Thermal Science	3
SCB23103	Strength of Materials	3	SDB24103	Design for Plastics & Elastomer	3
SCB24603	Fluid Mechanics	3	SCB24403	Finite Element Application	3
SDB23403	Ergonomics and Human Factors	3	SCB24503	Engineering Materials	3
STB24303	Computer Programming	3	STB36403	Internet of Things (IoT) Technology	3
SCB23302	Fundamentals of Materials Science	2			
Total Credit Hours		**18**	**Total Credit Hours**		**18**

Semester 5			Semester 6		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
WEB20302	Professional English 2	2	WMD10101/ WSD10101	Mandarin1/ Spanish1	1
WBB20103	Technopreneurship	3			
SDB36103	Machine & Mechanism Design	3	SCB35403	Vibration and Noise	3
SFB47303	CAD/CAM Rapid Prototyping	3	SCB37703	Heat Transfer & Thermal Management	3
STB35603	Pneumatic & Hydraulic Systems	3	SSB24203	Applied Statistics	3
SDB35103	Design for Sheet Metal Forming	3	SPB49804	Final Year Project 1	4
SDB35203	Metrology	3		Elective 1*	3
				Elective 2*	3
Total Credit Hours		**20**	**Total Credit Hours**		**20**

Semester 7			Semester 8		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
MPU2212	Bahasa Kebangsaan A*	2	WIB41012	Industrial Training	12
WMD1020/ WSD10201	Mandarin 2/ Spanish 2	1			
SFB23202	Professional Engineering Practice and Ethics	2			
SFB47703	Quality Engineering	3			
SFB36202	Industrial Safety & Health	2			
SPB49906	Final Year Project 2	6			
	Elective 3*	3			
Total Credit Hours		**17**	**Total Credit Hours**		**12**
TOTAL CREDIT TO GRADUATE (TCG)					**140**

Note:
*****Additional Module**

1. **MPU 3212 Bahasa Kebangsaan A** - For local students without credit in Bahasa Melayu (SPM) only and the credit is not included in program Total Credit to Graduate (TCG).
2. **MPU 3142 Bahasa Melayu Komunikasi 2** - For international student only.
3. **MPU 3342 Culture and Lifestyle in Malaysia 2** - For international student & Local non-Muslim only

Electives Courses		
Course Code	Course Name	Credit hours
SDB47403	Applied Computational Fluid Dynamics	3
SCB36203	Automotive Structure	3
SFB36303	CNC Technology	3
SMB48503	Smart Manufacturing	3
STB35803	Electric Machine Fundamentals	3
SMB46203	Industrial Automation and Robotics	3
SMB48903	Semiconductor Packaging & Manufacturing	3
SCB35403	Vibration and Noise	3

S15 - BACHELOR OF ENGINEERING TECHNOLOGY (HONS.) IN APPLIED ELECTRONICS (BET AE)

PROGRAMME STRUCTURE AND DESCRIPTION

BACKGROUND

Bachelor of Engineering Technology (Hons.) in Applied Electronics (BET AE) course are developed with the intention of providing a platform for individuals to have theoretical and practical skills required by the semiconductor and industrial electronic sectors. This program which is a cross-disciplinary field provides students with knowledge in radio frequency wireless technology, semiconductor, electrical, electronic devices, control system and instrumentation, automation, mechanical, manufacturing process and project management. These are some of the necessary fields required for the electronics industry.

Additionally, students will also be exposed to entrepreneurial skills that will help them developed their own business in future time. This is done by embedding entrepreneur elements in the courses of this programme. With the introduction of Industrialmanship and Teaching Factory it will ensure the students from this programme will not only be skilled in technical aspects but also in entrepreneurship. With the booming of electronics industry in the northern region, the students will have the opportunities to be a global technopreneurs.

CAREER INFORMATION

There are employment opportunities available in a wide range of sectors, such as Research and development, Design and Development (System, IC), Product Engineer (Electronic, RF), Process Engineer, Automation Engineer, Electrical Engineer, Electronic Engineer, Service Engineer, Maintenance Engineer, Quality Automation Engineer, Test Automation Engineer.

Program Educational Objectives (PEOs)

1	UniKL graduates who are highly **knowledgeable, competent**, and **innovative** in the field of applied electronics.
2	UniKL graduates who are effective **leaders with teamwork skills**, as well as **verbal and non-verbal interpersonal communication skills** to support their role in the field of applied electronics engineering technology.
3	UniKL graduates who are committed towards the importance of **lifelong learning** and **continuous improvement.**
4	UniKL graduates who are **professional**, **ethical**, and **socially responsible.**
5	UniKL graduates who are capable of embarking on **business** and **technopreneurial activities**

Program Learning Outcomes (PLOs)

1	**Knowledge:** Apply knowledge of mathematics, science, engineering fundamental and applied electronics engineering to define and applied engineering procedures, process, systems or methodologies.
2	**Problem Analysis:** Identify, formulate, research literature, modelling, simulate and solve broadly defined engineering problems reaching substantiated conclusions using appropriate analytical tools related to electronics technology
3	**Design/ development of solutions:** Design solutions for broadly defined engineering technology problems and contribute to the design of systems, components or process to meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations.
4	**Investigation:** Conduct investigations of broadly defined problems: locate, search and select relevant data from codes, data bases and literature, design and conduct experiments to provide valid conclusion.
5	**Modern Tool Usage:** Select and apply appropriate techniques, resources and modern engineering tools, including prediction and modelling to broadly-defined engineering activities, with an understanding of the limitations.
6	**The Engineer and Society:** Demonstrate understanding of the societal, health, safety, legal and cultural issues and the consequent responsibilities and norms of engineering technology practice.
7	**Environment and Sustainability:** Understand the impact of engineering solutions in a societal context and demonstrate knowledge of and the need for sustainable development.
8	**Ethics:** Understand and commit to professional ethics and responsibilities and norms of engineering technology practice.
9	**Individual and Teamwork**: Function effectively as an individual, and as a member in diverse technical teams.
10	**Communication**: Communicate effectively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions.
11	**Project Management and Finance**: Demonstrate knowledge and understanding of engineering management principles and apply these to one's own work, as a member or leader in a technical team and to manage projects in multidisciplinary environments.
12	**Life Long Learning**: Recognise the need for and have the ability to engage in independent updating in the context of specialised technical knowledge.

PROGRAM DESCRIPTOR

Program Code : **JPT/BPP (R/523/6/0278) 06/27, MQA FA 7649**
Final Award : **Bachelor of Engineering Technology**
Study Duration : **Min: 4 years, Max: 8 years**

Semester 1			Semester 2		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
MPU3192/ MPU3143	Falsafah dan Isu Semasa** Bahasa Melayu Komunikasi 2**	2	MPU34102	Integrity & Anti- Rasuah 2	2
			SSB10203	Engineering Mathematics 2	3
MPU3182/ MPU3342	Penghayatan Etika dan Peradaban**/ Culture and Lifestyle in Malaysia 2**	2	SAB12503	Semiconductor Technology	3
			SCB12103	Engineering Mechanics	3
WEB10302	Fundamental English	2	STB24403	Digital Electronics	3
WEB20202	Professional English 1	2	SAB23103	Analog Circuit Application 1	3
SSB10103	Engineering Mathematics 1	3	SAB12402	Applied Electronics Laboratory	2
SCB23302	Fundamental of Material Science	2			
STB12203	Electric Circuit Analysis	3			
Total Credit Hours		**16**	**Total Credit Hours**		**19**

Semester 3			Semester 4		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
MPU3242	Innovation Management	2	WEB20302	Professional English 2	2
SFB23202	Professional Engineering Practice and Ethics	2	WBB20103	Technopreneurship	3
STB24303	Computer Programming	3	MPU3332/ MPU3343	Isu-isu Kontemporari Muslim di Malaysia/ Culture and Lifestyle in Malaysia 2	2
SAB23203	Introduction to VLSI and Fabrication	3			
STB23102	Electronic Devices	2	STB36603	Electronic Instrumentation	3
SAB24803	Analog Circuit Application 2	3	SAB24203	Signals and Systems	3
SAB24603	Applied Digital Electronics	3	SAB24703	Object Oriented Programming	3
			SAB24102	Sensor Technology	2
Total Credit Hours		**18**	**Total Credit Hours**		**18**

Semester 5			Semester 6		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
SAB35603	Electronic Design Project	3	WMD10101/ WSD10101	Mandarin1/ Spanish1	1
STB35803	Electric Machine Fundamentals	3			
STB36403	Internet of Thing (IoT) Technology	3	SAB36703	Digital Control Systems	3
STB35503	Control Systems	3	SAB36203	Analog IC Design and Verification	3
STB35903	Microcontroller and Interfacing	3	SAB36303	Telecommunication System	3
SAB35503	Engineering Electromagnetics	3		Elective 1*	3
SAB35603	Electronic Design Project	3		Elective 2*	3
STB35803	Electric Machine Fundamentals	3	SPB49804	Final Year Project 1	4
Total Credit Hours		**18**	**Total Credit Hours**		**20**

Semester 7			Semester 8		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
MPU 3212	Bahasa Kebangsaan A*	2	WIB41012	Industrial Training	12
WMD1020/ WSD10201	Mandarin 2/ Spanish 2	1			
SFB47703	Quality Engineering	3			
STB47103	Digital Signal Processing	3			
SSB24203	Applied Statistics	3			
	Elective 3*	3			
SPB49906	Final Year Project 2	6			
Total Credit Hours		**19**	**Total Credit Hours**		**12**
TOTAL CREDIT TO GRADUATE (TCG)					**140**

Note:
*****Additional Module**

1. **MPU 3212 Bahasa Kebangsaan A** - For local students without credit in Bahasa Melayu (SPM) only and the credit is not included in program Total Credit to Graduate (TCG).
2. **MPU 3142 Bahasa Melayu Komunikasi 2** - For international student only.
3. **MPU 3342 Culture and Lifestyle in Malaysia 2** - For international student & Local non-Muslim only

Electives Courses		
Course Code	Course Name	Credit hours
SAB36403	RF/ Microwave Circuits & Systems	3
SAB36503	RFIC Design for Wireless Communication	3
STB36303	Power Electronics and Drive	3
STB47503	Artificial Intelligence	3
SAB36603	Advanced Digital Design and FPGA	3
SAB36403	RF/ Microwave Circuits & Systems	3

S20 - BACHELOR OF MECHANICAL ENGINEERING WITH HONOURS (BeME)

PROGRAMME STRUCTURE AND DESCRIPTION

BACKGROUND

Bachelor of Mechanical Engineering with Honours aims to assist graduates to become full fledge Mechanical Engineers with the required knowledge and technical skills to serve the industry upon graduating. Emphasize will be given on components and systems to serve the mechanical, manufacturing, semiconductor, electronics, solar and also oil and gas industry. The graduates are expected to possess the necessary technical competencies and generic professional skills such as leadership, teamwork, communication, ethical, continuous improvement, lifelong learning, business and technopreneurship in order to be knowledgeable, competent and innovative Mechanical engineers.

CAREER INFORMATION

Graduates will be able to work in vast engineering and mechanical sector such as Mechanical engineers research, design, develops, manufacture, and test tools, engines, machines, and other mechanical devices. Engineers in this discipline work on power-producing machines such as electric generators, internal combustion engines and steam and gas turbines. They also work on power-using machines. Some mechanical engineers design tools that other engineers need for their work. In addition, mechanical engineers work in manufacturing or agriculture production, maintenance, or technical sales.

Program Educational Objectives (PEOs)

1	To produce technically **qualified mechanical engineers** who will contribute towards the human capital in the related industry.
2	To produce mechanical engineers with the ability to **advance** themselves in **an engineering, technical or academic field.**
3	To produce mechanical engineers who **practice professionally**, ethically with social responsibility.
4	To produce mechanical engineers who are capable of **embarking on business** and **technopreneurial activities**.

Program Learning Outcomes (PLOs)

1	**Engineering Knowledge:** Apply knowledge of mathematics, science, engineering fundamentals and mechanical engineering to the solution of complex engineering problems;
2	**Problem Analysis:** Identify, formulate, research literature and analyse complex mechanical engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences;
3	**Design/ development of solutions:** Design solutions for complex mechanical engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations;
4	**Investigation:** Conduct investigation into complex problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions;
5	**Modern Tool Usage:** Create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex mechanical engineering activities, with an understanding of the limitations;
6	**The Engineer and Society:** Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice;
7	**Environment and Sustainability:** Understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development;
8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice;
9	**Communications:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**;**
10	**Individual and Team Work:** Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings;
11	**Life Long Learning:** Recognise the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.
12	**Project Management and Finance:** Demonstrate knowledge and understanding of engineering, entrepreneurship and management principles and apply these to one's own work, as a member or leader in a team, to manage projects and in multidisciplinary environments.

PROGRAM DESCRIPTOR

Program Code : **JPT/BPP (R/521/6/0160) 07/29, MQA FA 8216**
Final Award : **Bachelor of Engineering**
Study Duration : **Min: 4 years, Max: 8 years**

Semester 1			Semester 2		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
WEB10302	Fundamental English	2	MPU3332/ MPU3342	Isu-isu Kontemporari Muslim di Malaysia*/ Culture and Lifestyle in Malaysia 2**	2
WEB20202	Professional English 1	2			
MPU3182/ MPU3192	Penghayatan Etika dan Peradaban*/ Philosophy and Current Issues**	2	SMB10102	Electrical Engineering	2
			SMB10203	Materials Engineering	3
MPU3192 MPU3142	Falsafah dan Isu Semasa* Bahasa Melayu Komunikasi 2**	2	SMB12203	Engineering Statics	3
			SMB13103	Metrology & Engineering Workshop	3
SMB10113	Elementary Engineering Mathematics	3	SMB12113	Engineering Calculus	3
SMB12103	Engineering Drawing and CAD	3			
SMB10202	Engineering Practice & Professionalism	2			
Total Credit Hours		**16**	**Total Credit Hours**		**16**

Semester 3			Semester 4		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
MPU34102	Integrity & Anti- Rasuah 2	2	MPU3242	Innovation Management	2
SMB24043	Fluid Mechanics	3	SMB20303	Electronics Engineering	3
SMB20103	Computer Programming for Engineers	3	SMB24033	Solid Mechanics	3
SMB23113	Vector Calculus	3	SMB35043	Fluid Dynamics	3
SMB23053	Fundamentals of Thermodynamics	3	SMB23103	Manufacturing Processes	3
SMB23063	Mechanical Design Process	3	SMB24053	Applied Thermodynamics	3
Total Credit Hours		**17**	**Total Credit Hours**		**18**

Semester 5			Semester 6		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
WEB20302	Professional English 2	2	SMB30102	Industrial Safety and Health	2
WBB20103	Technopreneurship	3	SMB31303	Noise and Vibrations	3
SMB35033	Engineering Dynamics	3	SMB30203	Statistics for Engineers	3
SMB35053	Heat Transfer	3	SMB35063	Machine Component Design	3
SMB35083	Control Systems for Mechanical Engineer	3	SMB34103	Measurement and Instrumentation Systems	3
SMB32103	Computer Aided Engineering Analysis	3	SMB35073	Lean Manufacturing	3
Total Credit Hours		**18**	**Total Credit Hours**		**20**

Inter Semester		
Course Code	Course Name	Credit hours
SMB47015	Industrial Training	5
Total Credit Hours		**5**

Semester 7			Semester 8		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
WMD1010/ WSD10101	Mandarin1 / Spanish1	1	WMD10201/ WSD10201	Mandarin 2/ Spanish 2	1
SMB36103	Internet of Things (IoT) Technology	3	MPU3213	Bahasa Kebangsaan A*	3
SMB47053	Integrated Mechanical System Design	3	SMB40102	Engineers in Society	2
SMB49802	Engineering Final Year Project 1	2	SMB48102	Industrial Project Management	2
SMB46203	Industrial Automation and Robotics	3	SMB49904	Engineering Final Year Project 2	4
SMB4XXXX	Elective 1	3	SMB4XXXX	Elective 2	3
			SMB4XXXX	Elective 3	3
Total Credit Hours		**15**	**Total Credit Hours**		**15**
TOTAL CREDIT TO GRADUATE (TCG)					**135**

Note:
*****Additional Module**

1. **MPU 3212 Bahasa Kebangsaan A** - For local students without credit in Bahasa Melayu (SPM) only and the credit is not included in program Total Credit to Graduate (TCG).
2. **MPU 3142 Bahasa Melayu Komunikasi 2** - For international student only.
3. **MPU 3342 Culture and Lifestyle in Malaysia 2** - For international student & Local non-Muslim only

Electives Courses		
Course Code	Course Name	Credit hours
SMB46103	CNC and CAD/CAM Technology	3
SMB47303	Internal Combustion Engines	3
SMB47503	Ergonomics and Human Factors	3
SMB47603	Quality System and Standard	3
SMB48503	Smart Manufacturing	3
SMB48603	Design for Sheet Metal	3
SMB48703	Design for Plastic and elastomer	3
SMB48803	Advanced Finite Element Analysis	3
SMB48903	Semiconductor Packaging & Manufacturing	3
SMB46103	CNC and CAD/CAM Technology	3
SMB47303	Internal Combustion Engines	3
SMB47503	Ergonomics and Human Factors	3

S21 - BACHELOR OF BUSINESS TECHNOLOGY (HONOURS) IN AUTOMOTIVE MANAGEMENT (BBT AM)

PROGRAMME STRUCTURE AND DESCRIPTION

BACKGROUND

The Bachelor of Business Technology (Hons.) in Automotive Management programme aims to produce graduates with business knowledge of automotive management skills and strong entrepreneurial spirit, exemplary leadership skills, high commitment towards pursuit of knowledge and excellence, and innovative, socially responsible and good team players, credential necessary to advance into management level positions. The Bachelor of Business Technology (Honours) in Automotive Management plays a significant role to provide a business education while promoting students to work on commercially driven innovation in entrepreneurship programs.

CAREER INFORMATION

Business technologist is a group of services include in technology planning, project management, support, database services, network, management and documentation.

Program Educational Objectives (PEOs)

1	To produce graduates who are **knowledgeable, competent and innovative** in automotive management and entrepreneurship.
2	To produce graduates who have **effective leadership** qualities and **communication skills** to support their roles in the industries.
3	To produce graduate who are committed towards **lifelong learning** and **continuous improvement.**
4	To produce graduate who practice professionalism with **ethics and social responsibility**.
5	UniKL graduates who are capable of embarking on **business and technopreneurial** activities.

Program Learning Outcomes (PLOs)

1	Assess in-depth theories and concepts in automotive business.
2	Apply in-depth and comprehensive automotive business knowledge to manage complex problems in business organisations using different approaches.
3	Organise tasks/operations ethically and flexibly within business organisations.
4	Demonstrate effective written and oral communication and collaborative skills with diverse stakeholders.
5	Demonstrate relevant digital skills for work/study.
6	Analyse numerical and graphical data to assist decision-making in work/study.
7	Demonstrate leadership skills and responsibility in managing business organisations.
8	Identify self-improvement for academic and career development.
9	Demonstrate entrepreneurship skills in resolving business problems.

PROGRAM DESCRIPTOR

Program Code : **JPT/BPP (N/345/6/1095) 04/26, MQA PA 11195**
Final Award : **Bachelor of Business Technology**
Study Duration : **Min: 4 years, Max: 8 years**

Semester 1			Semester 2		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
WEB10302	Fundamental English	2	MPU3242	Innovation Management	2
WEB20202	Professional English 1	2	MPU3332/ MPU3342	Isu-isu Kontemporari Muslim di Malaysia/ Culture and Lifestyle in Malaysia 2**	2
MPU34102	Integriti & Anti- Rasuah 2	2			
MPU3192/ MPU3142	Falsafah dan Isu Semasa/ Bahasa Melayu Komunikasi 2**	2	SIB12703	Consumer Behavior	3
			SIB23103	Purchasing Management	3
MPU3182/ MPU3192	Penghayatan Etika dan Peradaban*/ Philosophy and Current Issues**	2	SIB23403	Management Information Systems	3
			SIB23302	Business Law and Policy	2
SIB11203	Human Resource Management	3	SIB12503	Principles of Accounting	3
SIB12303	Principles of Marketing	3			
SIB12203	Business Mathematics	3			
Total Credit Hours		**19**	**Total Credit Hours**		**18**

Inter Semester		
Course Code	Course Name	Credit hours
SIB11101	Business Attachment 1	1
Total Credit Hours		**1**

Semester 3			Semester 4		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
WEB20302	Professional English 2	2	WBB20103	Technopreneurship	3
SIB11013	Principles of Management	3	SIB24203	Research Methodology	3
SIB24103	Introduction to Statistical Analysis	3	SIB24302	Business Communication	2
SIB23203	Management Accounting	3	SIB35703	Strategic Management	3
SIB24603	Automotive Safety	3	SIB24503	IoT Data Analytics	3
SIB24403	Supply Chain Management	3	SIB35303	Automotive Engineering Fundamentals	3
SIB23503	Professional Business Practices and Ethics	3	SIBXXXXX	Elective 1	3
Total Credit Hours		**19**	**Total Credit Hours**		**19**

Inter Semester		
Course Code	Course Name	Credit hours
SIB21101	Business Attachment	1
Total Credit Hours		**1**

Semester 5			Inter Semester		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
SIB35103	Automotive Shop Management and Supervision	3	SIB31101	Pre Project	1
SIB35203	Automotive Parts and Service Management	3			
SIB36403	Operation Management	3			
SIB35403	Automotive Business & Sales Management	3			
SIB35503	Automotive Marketing Management	3			
SIBXXXXX	Elective 2	3			
Total Credit Hours		**18**	**Total Credit Hours**		**1**

Semester 6			Semester 7		
Course Code	Course Name	Credit hours	Course Code	Course Name	Credit hours
MPU3213	Bahasa Kebangsaan A*	3	WIB39909	Industrial Training	9
SB36103	Automotive Sales Concepts and Applications	3			
SIB36206	Final Year Project	6			
	Elective 3	3			
	Elective 4	3			
Total Credit Hours		**15**	**Total Credit Hours**		**9**
TOTAL CREDIT TO GRADUATE (TCG)					**122**

Note:
*****Additional Module**

1. **MPU 3212 Bahasa Kebangsaan A** - For local students without credit in Bahasa Melayu (SPM) only and the credit is not included in program Total Credit to Graduate (TCG).
2. **MPU 3142 Bahasa Melayu Komunikasi 2** - For international student only.
3. **MPU 3342 Culture and Lifestyle in Malaysia 2** - For international student & Local non-Muslim only

Electives Courses		
Course Code	Course Name	Credit hours
SIB23603	Franchise Business Management	3
SIB23703	International Entrepreneurship	3
SIB35603	Economics of Innovation and Entrepreneurship	3
SIB24703	Automotive Financial Management	3
SIB24803	Automotive Commercial Relationships	3
SIB36603	Automotive Part Inventory Management and Merchandising	3
SIB36503	Project Management	3

MASTER PROGRAMME

S60 – MASTER OF BUSINESS TECHNOLOGY

PROGRAMME STRUCTURE AND DESCRIPTION

BACKGROUND

Business Technology master programs are designed to prepare students for a wide range of careers in the public and private sectors, often building on undergraduate studies in engineering, math, and the sciences. Masters programs in business technology combine engineering knowledge with business skills. For those who earn business technology master degree, there may be exciting careers in areas such as resource business management, public policy analysis, new entrepreneur in logistics and supply chain and future automotive business networking. With field experience, individuals with business technology master degree may also be able to teach at the college and university level or work in government. The powerful combination of coursework and applied knowledge in business technology master programs can help prepare students for careers in these fields. The Master of Business Technology is different from Master Business Administration (MBA) since the latter focus on administrative knowledge in accounting, economics, marketing, and operations and allows candidates to pursue their own personal and professional interests in business without advance knowledge in technology.

CAREER INFORMATION

This postgraduate program is designed to equip students with knowledge in automotive and logistics management and technology at an intermediate level. It offers courses that can be grouped into three areas, namely industrial services, distribution and logistics as well as the automotive business, to fulfill the needs in business and technical management skills

Job Opportunities:

- Cloud-based Entrepreneur
- Manager in Electronics Industries and Services
- Part and Component Distributor
- Automotive & Mobility Dealer
- ERP Application Designer
- Mobility & Locality Strategies
- Architecture Design & Development Technology Assessor

Program Educational Objectives (PEOs)

1	UniKL graduates who are **knowledgeable, competent and innovative** in new business technology focused on industrial services, distribution and logistics, and automotive business.
2	UniKL graduates who have effective **leadership qualities** and **communication skills** to support their roles in the industries.
3	UniKL graduates who are committed to the importance of **lifelong learning** and **continuous improvement**.
4	UniKL graduates who practice **professionalism with ethics and social responsibility**.
5	UniKL graduates who are **enterprising** and capable to participate in **business** and **entrepreneurial activities** in the industries.

Program Learning Outcomes (PLOs)

1	Evaluate theories and concepts in business technology.
2	Resolve complex problems by providing recommendations to business organisations.
3	Organise complex tasks/operations ethically and flexibly within business organisations.
4	Demonstrate effective and cogent written and oral communication and collaborative skills with diverse stakeholders in business technology.
5	Demonstrate relevant digital skills for research/work/business technology study.
6	Interpret numerical, qualitative and graphical data to support decision-making and problem-solving in work/ business technology study.
7	Display leadership skills and responsibility in managing business organisations.
8	Display continuous self-improvement for academic and career development.
9	Display entrepreneurship skills in resolving business problems.

PROGRAM DESCRIPTOR

Program Code : **JPT/BPP (N/345/7/1115) 07/22, MQA PA13370**
Final Award : **Master of Business Technology**
Study Duration : **Min: 1 year, Max: 2 years**
Mode : **Full-Time Program**

Semester 1		
Course Code	Course Name	Credit hours
SLG61203	Innovation Technology in Entrepreneurship	3
SLG61303	Strategic Management	3
SLG61403	Cloud Based Technology	3
SLG62103	Information Technology in Project Management	3
SLG61503	Sustainable Product Development	3
SLG61603	Technology Management	3
Total Credit Hours		**18**

Short Semester		
Course Code	Course Name	Credit hours
SLG61103	Research Methodology	3
SLG63203	Elective 1	3
Total Credit Hours		**6**

Semester 2		
Course Code	Course Name	Credit hours
SLG63110	Master Project in Technology	10
SLG62203	Managerial Economics	3
SLG62303	Financial Information and Analysis	3
Total Credit Hours		**16**
TOTAL CREDIT TO GRADUATE (TCG)		**40**

ELECTIVES COURSE		
Course Code	Course Name	Credit hours
SLG63103	Quality Management System	3
SLG63203	Electronics Manufacturing Services	3
SLG63503	Port Operations and Logistics	3
SLG63703	Automotive Dealership	3

PROGRAM DESCRIPTOR

Program Code : **JPT/BPP (N/345/7/1115) 07/22, MQA PA13370**
Final Award : **Master of Business Technology**
Study Duration : **Min: 1 year, Max: 2 years**
Mode : **Part -Time Program**

Semester 1		
Course Code	Course Name	Credit hours
SLG61103	Research Methodology	3
SLG61203	Innovation Technology and Entrepreneurship	3
SLG62103	Information Technology in Project Management	3
Total Credit Hours		9

Semester 2		
Course Code	Course Name	Credit hours
SLG61303	Strategic Management	3
SLG61403	Cloud Based Technology	3
SLG61603	Technology Management	3
Total Credit Hours		9

Semester 3		
Course Code	Course Name	Credit hours
SLG62203	Managerial Economics	3
SLG62303	Financial Information Analysis	3
SLG61503	Sustainable Product Development	3
Total Credit Hours		9

Semester 4		
Course Code	Course Name	Credit hours
SLG63110	Master Project in Technology	10
	Elective	3
Total Credit Hours		13
TOTAL CREDIT TO GRADUATE (TCG)		**40**

ELECTIVES COURSE		
Course Code	Course Name	Credit hours
SLG63103	Quality Management System	3
SLG63203	Electronics Manufacturing Services	3
SLG63503	Port Operations and Logistics	3
SLG63703	Automotive Dealership	3

SYNOPSIS OF COURSES

COURSE OFFERED BY MECHANICAL SECTION (DIPLOMA)

SSD11203 - Engineering Science
Pre-Requisite: Nil
Synopsis:
This course is designed to enhance the basic skill in mechanical and electrical engineering in their previous studies. Students will be exposed on motion in one dimension, Newton's Law of motion, work and energy, rotational motion, momentum and impulse and analyze in terms of mechanics, structure and flow of an object.
References:
W.Bolton. (2020) **Engineering Science** 7th Edition. England, UK: Routledge.

SDD12302 - Materials Science
Pre-Requisite: Nil
Synopsis:
This subject focuses on metal & non-metal materials used in manufacturing processes in terms of their physical, chemical, mechanical and technological properties.
References:
1. Callister, W.D. and Rethwisch, D.G. (2018). ***Materials Science and Engineering: An Introduction***. 10th ed. Hoboken (NJ): John Wiley & Sons.
2. Callister, W.D and Rethwisch, D.G. (2012). ***Fundamentals of Materials Science and Engineering: An Integrated Approach.*** 4th ed. Hoboken (NJ): John Wiley & Sons.
3. Budinski G.K., Budinski M. K. (2010). ***Engineering Materials: Properties and Selection.*** 9th ed. USA: Prentice Hall Press.

SDD11402 - Fitting and Welding Fundamental
Pre-Requisite: Nil
Synopsis:
This course introduces the students with the knowledge of basic tools for common practice in basic fitting and welding process to perform joining between the metals.
References:
1. Kalpakjian, S., Schmid, S. R., & Sekar, K. S. (2016). **Manufacturing: Engineering and Technology**. Melbourne, Victoria, Australia: Pearson Australia.
2. Bruce J. Black (2015). **Workshop Processes, Practices and Materials** (5th Edition). Routledge.
3. Christena, S. B. (2014). **Learn to Weld: Beginning MIG Welding and Metal Fabrication Basics**. Crestline Books.

SDD11302 - Engineering Drawing
Pre-Requisite: Nil
Synopsis:
This subject exposes the students on knowledge of technical drawings, focusing on producing engineering drawings by using hand tools/instruments. This subject covers the study of object representation in 2-D and 3-D views such as orthographic projection, isometric projections, and sectional views. Furthermore, this subject also exposes on conventions and standard practices in creating engineering drawing such as title blocks and layout.
References:
1. K. Rathnam (2018). **A First Course in Engineering Drawing**; Springer.
2. David P. Madsen (2012). **Engineering Drawing and Design**, Clifton Park, NY: Delmar, Cengage Learning.

SDD12303 - Engineering Mechanics
Pre-Requisite: Nil
Synopsis:
This subject focuses on solving engineering problems using Newton's law of motion in Statics and Dynamics. In Statics, students will learn how to solve problems such as force resultants, static equilibrium of a particles and rigid bodies, structural analysis and friction. In Dynamics, students will learn how to solve problems regarding motion in kinematics and kinetics for particles and rigid bodies.
References:
1. Hibbler R. C. (2016). **Engineering Mechanics: Static**. (15th ed.). Singapore: Prentice Hall.
2. Hibbler R. C. (2016). **Engineering Mechanics: Dynamics**. (15th ed.). Singapore: Prentice Hall.

SDD12503 - Metrology
Pre-Requisite: Nil
Synopsis:
This course focuses study on the principles and methods of measurement, testing and inspection with emphasizing on the use of dimensional metrological instruments within automotive components for geometric characteristics, surface finish and coordinate measurement.
References:
1. Basic Metrology and Applied Metrology Lab
2. Dotson, C. L. (2016). Fundamentals of Dimensional Metrology. (6th ed.). New York: Thomson Delmar Learning.
3. Farago, F. T., & Curtis, M. A. (2014). Handbook of Dimensional Measurement. (5th ed.). USA: Industrial Press Inc.

SDD23203 - Applied Materials
Pre-Requisite: SDD12302 - Materials Science
Synopsis:
This subject establishes a broad knowledge of science behind materials behaviours and properties. It also introduces the basic techniques of analysing metal's characteristics by metallographic procedures. The subject will also relate the classification, types of steel and cast iron used in the machine tool sector. It also covers a very basic knowledge and understanding of mechanical and destructive testing in metallurgy. **References:**
1. Callister, W.D. and Rethwisch, D.G. (2018). **Materials Science and Engineering: An Introduction**, 10th ed. Hoboken (NJ): John Wiley & Sons.
2. Budinski G.K., Budinski M. K. (2010). Engineering Materials: Properties and Selection. 9th ed. USA: Prentice Hall Press.
3. Donald R. Askeland, Pradeep P. Fulay and Wendelin J. Wright. (2010). The Science and Engineering of Materials. 6th ed. CL Engineering.

SDD12202 - Computer Aided Design
Pre-Requisite: SDD11302 - Engineering Drawing
Synopsis:
This subject is focusing on the introduction, identification and understanding the environment, the use of equipment required while using CAD system, to understand engineering features the came with solid modelling, which compromise of the Operation Systems together with CAD program itself which is to get the user to be more aware of CAD environment and be able to draw technical drawing, assembly and exploded views, detail drawings, bill of materials and etc.
References:
1. K. Rathnam (2018). **A First Course in Engineering Drawing**; Springer.
2. William E. Howard (2017). **Introduction to Solid Modelling Using SolidWorks** 2017, McGraw-Hill Education, 2017

SDD23603 - Ergonomics & Human Factors
Pre-Requisite: Nil
Synopsis:
This module covers the important aspects on ergonomics concepts and practices. Students will first be introduced to ergonomics in general, musculoskeletal system of human body, engineering anthropometry, biomechanical bases of ergonomics, work physiology. This module will also expose students to anthropometric data for vehicle design, vehicle's interior layout, manual materials handling, work-tool design, man-machine systems, occupational environments, thermal, light, noise and vibration. At the end of the module, will be able to do ergonomic assessment of workplace, implementation of ergonomics program.
References:
1. R.S. Bridger. (2018**). Introduction to Human Factors and Ergonomics**. (4th ed.). Boca Raton: CRC Press.
2. Guastello, Stephen J, (2013). **Human Factors Engineering and Ergonomics a Systems Approach**. Lawrence Erlbaum Associates.
3. Gavriel Salvendy (2012). **Handbook of Human Factors and Ergonomics**. 4th Ed., John Wiley & Sons, Inc.
4. Shrawan Kumar (2007). **Biomechanics in Ergonomics**. 2nd Ed., CRC Press, Taylor & Francis Group.

SDD23503 - Strength of Materials
Pre-Requisite: SDD12303 - Engineering Mechanics
Synopsis:
This subject focuses on solving engineering problems using stress and strain, mechanical properties of materials, shear forces and bending moment, deflection, torsion, combined stresses, frame and machine.
References:
1. R.C. Hibbler. (2017). **Mechanics of Materials.** (10th ed.). Prentice Hall.
2. Ferdinand P. Beer, E. Russell Johnston Jr., John T. DeWolf and David F. Mazurek (2014). **Mechanics of Materials**. (7th ed.). McGraw-Hill Education.
3. James M. Gere and Barry J. Goodno (2012). **Mechanics of Materials**. (8th ed.). CL Engineering.
4. Harold I. Morrow and Robert P. Kokernak (2010). **Statics and Strength of Materials**. (7th ed.). Prentice Hall.

SDD24103 - Machine Component Design
Pre-Requisite: SDD23503 - Strength of Materials
Synopsis:
This course presents the principles of components design such as gear, shaft, clutch, bearing and etc. In particular, it emphasizes on the key element of design which include strength analysis and professional ethics in generating inherently safe, economic and good products. It also deals with selection of appropriate mechanical components from the standard and manufacturers' catalogues in the design solutions.

References:

1. Budynas, Richard G.; Nisbett, Keith J. (2019). Shigley's **Mechanical Engineering Design** (in SI Units). 11th Edition. McGraw-Hill Education (Asia).
2. Robert C. Juvinall, Kurt M. Marshek (2012). **Machine Component Design**, International Student Version. 5th Edition. John Willey & Sons.
3. P.C. Gope (2012). **Machine Design Fundamentals and Applications**. New Delhi: PHI Learning Private Limited.
4. Kenneth d'Entremont (2020). **Engineering Ethics and Design for Product Safety**. 1st Edition. McGraw-Hill Education.

SDD24303 - Mechanical Design Process

Pre-Requisite: SDD12202 - Computer Aided Design

Synopsis:

The topic covers approach towards basic design skills, methodology and basic product construction. The application of engineering sketching, model construction and technical documentation were added for their understanding. Products. MDP is the main subject for mechanical students to explore their skills on how to tackle mechanical design problem through basic reverse engineering and conceptual design activities. Designing for strength and the selection criteria.

References:

1. David Ullman (2015). **The Mechanical Design Process**; 5th ed. McGraw-Hill Education.
2. 2. Richard Budynas and Keith Nisbett (2014). **Shigley's Mechanical Engineering Design**; 10th ed. McGraw-Hill Education.

SDD11203 - Engineering Drawing & CAD

Pre-Requisite: SDD12302 - Materials Science

Synopsis:

This is an introductory course aimed at providing students with the fundamental concepts of technical drawing and CAD which form the foundation for their study in later years. These concepts are essential for the students will employ knowledge in the design work.

References:

1. K. Rathnam (2018). **A First Course in Engineering Drawing**; Springer
2. William E. Howard (2017). **Introduction to Solid Modelling Using SolidWorks** 2017, Mcgrawhill Education, 2017
3. David P. Madsen (2012). **Engineering Drawing and Design**, Clifton Park, NY: Delmar, Cengage Learning.

SDD23703 - Industrial Mechanics and Maintenance

Pre-Requisite: SDD12303 - Engineering Mechanics

Synopsis:

The subject will expose the students with basic tolerance and adjustments concept. This is very important fundamental knowledge to understand the concept of fitting the components. Hand tools and joining methods are introduced and practiced. Then mechanical components that are commonly used are introduced such as bearing, pulley, belting, gears, guide rails and power transmission system. The students also will hand on to know how knowledge of this components. The type and the cause of breakdown of these components are also introduced and evaluated. The diagnosis methods that are essential in maintenance also introduced.

References:

1. Albert W. Kemp**, Industrial Mechanics** (2012). USA: 3rd ed. ATP.
2. Larry Chastain (2009). **Industrial Mechanics and Maintenance**. Greece: 3rd ed.Pearson. Prentice Hall.
3. Robert C. Juvinall, Kurt M. Marshek (2011). **Fundamentals of Machine Component Design**. 5th ed. Wiley.
4. Denis Green, Jonathan F. Gosse. (2006) **Industrial Maintenance**. USA: 2nd ed. ATP.

COURSE OFFERED BY MECHANICAL SECTION (BACHELOR)

SCB12103 - Engineering Mechanics
Pre-Requisite: Nil
Synopsis:
Statics: Development of free-body diagrams and self-checking strategies to solve static equilibrium engineering problems using Newton's law of motion; equilibrium of a particles, force system resultants, equilibrium of rigid bodies, center of gravity and centroids, distributed loading, analysis of structure, internal forces and friction.
Dynamics: This topic focuses on the application for Newtonian physics on physical situation and mathematical description of motion and determine motion in problems involving the concepts of force and energy. This topic is restricted to 2-D & 3D mechanisms.
References:

1. Hibbler R. C. (2015). **Engineering Mechanics: Static**. (14th ed.). Singapore: Prentice Hall.
2. Hibbler R. C. (2015). **Engineering Mechanics: Dynamics**. (14th ed.). Singapore: Prentice Hall.
3. Beer, F. Jr.; Johnston, E. R.; Mazurek D. & Cornwell P. (2013). **Vector Mechanics for Engineers. Statics and Dynamics**. New York: McGraw-Hill.
4. Meriam J. L. (2012). **Engineering Mechanics Static**. (7th ed). Hoboken (New Jersey): John Willey & Sons.
5. Meriam J. L. (2012). **Engineering Mechanics Dynamics**. (7th ed). Hoboken (New Jersey): John Willey & Sons.

SCB12403 - Engineering Drawing and CAD
Pre-Requisite: Nil
Synopsis:
This subject focuses on metal & non-metal materials used in manufacturing processes in terms of their physical, chemical, mechanical and technological properties.
References:

1. Callister, W.D. and Rethwisch, D.G. (2014). ***Materials Science and Engineering: An Introduction***. 9th ed. Hoboken (NJ): John Wiley & Sons.
2. Callister, W.D and Rethwisch, D.G. (2012). ***Fundamentals of Materials Science and Engineering: An Integrated Approach.*** 4th ed. Hoboken (NJ): John Wiley & Sons.
3. Budinski G.K., Budinski M. K. (2010). ***Engineering Materials: Properties and Selection.*** 9th ed. USA: Prentice Hall Press.
4. Shackelford F. J. (2007). **Introduction to Materials Science for Engineers.** USA: Prentice Hall Press.

SCB12303 - Automotive Engineering Fundamental
Pre-Requisite: Nil
Synopsis:
This subject is emphasized to expose the students about the fundamental of automotive technology, drive line, drive train, vehicle construction and application of vehicle function.
References:

1. Erjavec, J. and Thompson, R. (2015). **Automotive Technology: A Systems Approach**. (6th ed.). Clifton Park (NY), USA: Cengage Learning.
2. Halderman, James D. (2015). **Automotive Technology: Principle, Diagnosis and Service.** (5th ed.). Upper Saddle River (N.J): Pearson Prentice Hall.
3. Duffy, James E. (2013). **Modern Automotive Technology**. (8th ed.). Tinley Park (IL): Goodheart-Willcox Company.
4. Yunus A. Cengel, and John M. Cimbala. (2006). *Fluid Mechanics: Fundamentals & Applications*. (Wiley Asia Student ed.). Singapore: McGraw-Hill.
5. Munson, B.R., Young, D.F., Okiishi, T.H., (2006). *Fundamentals of Fluid Mechanics*. (5th ed.). Asia: John Wiley and Sons Inc.
6. Donald F. Young, Bruce R. Munson, Theodore H. Okiishi and Wade W. Huebsch., (2007). *A Brief Introduction to Fluid Mechanics*. (4th ed.). USA: John Wiley & Sons Inc.
7. CDX Automotive (2013). **Fundamentals of Automotive Technology: Principles and Practice**. Burlington (Mass.): Jones & Bartlett Learning

SCB23103 - Strength of Materials
Pre-Requisite: SCB12103 - Engineering Mechanics
Synopsis:
Introduction to stress and strain, mechanical properties of materials, axial, bending, torsion and combined loading of structures, shear forces and bending moments in beams, shear stresses, thin-walled pressure cylinders, stress transformation, Mohr's circle, principle stresses, buckling of columns and theories of failures.
References:

1. R.C. Hibbler. (2013). Mechanics of Materials. (9th ed.). Prentice Hall R. L. Boylestad (2014). *Introductory Circuit Analysis*. 12th Edition. New York: Prentice Hall.
2. Ferdinand P. Beer, E. Russell Johnston Jr., John T. DeWolf and David F. Mazurek (2014). Mechanics of Materials. (7th ed.). McGraw-Hill Education.
3. James M. Gere and Barry J. Goodno (2012). Mechanics of Materials. (8th ed.). CL Engineering.
4. Harold I. Morrow and Robert P. Kokernak (2010). Statics and Strength of Materials. (7th ed.). Prentice Hall.
5. Harold I. Morrow and Robert P. Kokernak (2010). Statics and Strength of Materials. (7th ed.). Prentice Hall.

SCB23302 - Fundamental of Material Science
Pre-Requisite: Nil
Synopsis:
This course focuses on the fundamentals of structure, energetics, and bonding that underpin materials science. Topics include: the mechanical properties of materials, the distinction between elastic and plastic deformation of crystalline solids, the theoretical strength of crystalline solids, effect of dislocations, types of failure mechanisms, theological properties of materials, models of viscoelastic behavior the formation of crystalline solids, direct observation of the microstructure of materials, the failure of materials in engineering service, polymers and composites.
References:

1. Callister, W.D. and Rethwisch, D.G. (2014). **Materials Science and Engineering: An Introduction**, (9th ed.). Hoboken (NJ): John Wiley & Sons.
2. Callister, W.D and Rethwisch, D.G. (2012). **Fundamentals of Materials Science and Engineering: An Integrated Approach**. (4th ed.). Hoboken (NJ): John Wiley & Sons.
3. Budinski G.K., Budinski M. K. (2010). **Engineering Materials: Properties and Selection**. (9th ed.). USA: Prentice Hall Press.
4. Shackelford F. J. (2007). **Introduction to Materials Science for Engineers**. USA: Prentice Hall Press
5.

SCB23603 - Thermal Science
Pre-Requisite: Nil
Synopsis:
Introduction of general concepts of properties of working fluids in relation to heat and work. 1st and 2nd law, use of thermo table, Thermodynamic cycles, heat pumps, Otto cycle, Diesel cycle and Introduction to heat transfer.
References:

1. Cengel, Yunus A., Cimbala, John M., Turner, Robert H. (2012). **Fundamentals of Thermal-Fluid Sciences in SI Units**. (4th ed.). Singapore: McGraw-Hill.
2. Cengel, Yunus A., Boles, M. (2014). **Thermodynamics: An Engineering Approach**. (8th ed.). Singapore: McGraw-Hill.
3. Michael J. Moran, Howard N. Shapiro, Daisie D. Boettner, Margaret B. Bailey. (2014). **Fundamentals of Engineering Thermodynamics**. (8th ed.). Hoboken (Jersey): John Wiley and Sons.
4. Michael J. Moran, Howard N. Shapiro, Daisie D. Boettner, Margaret B. Bailey. (2011). **Principles of Engineering Thermodynamics**. SI Version. (7th ed.). Hoboken (Jersey): John Wiley and Sons

SCB 24603/ SCB23304 - Fluid Mechanics
Pre-Requisite: SCB 12103 Engineering Mechanics
Synopsis:
Fluid properties, fluid statics, fluid in motion, pressure variation in flowing fluids, momentum and energy principles, dimensional analysis and similitude, flow in conduits, flow measurements and introduction to turbomachinery.
References:

Yunus A. Cengel, Robert H. Turner, and John M. Cimbala. (2012). *Fundamentals of Thermal-Fluid Sciences*. (4th ed. in SI Units.). Singapore: McGraw-Hill.

SCB23503 - Chassis and Vehicle Dynamics
Pre-Requisite: SCB12303 - Automotive Engineering Fundamental
Synopsis:
Introduction to stress and strain, mechanical properties of materials, axial, bending, torsion and combined loading of structures, shear forces and bending moments in beams, shear stresses, thin-walled pressure cylinders, stress transformation, Mohr's circle, principle stresses, buckling of columns and theories of failures.
References:

1. R.C. Hibbler. (2013). Mechanics of Materials. (9th ed.). Prentice Hall R. L. Boylestad (2014). *Introductory Circuit Analysis*. 12th Edition. New York: Prentice Hall.
2. Ferdinand P. Beer, E. Russell Johnston Jr., John T. DeWolf and David F. Mazurek (2014). Mechanics of Materials. (7th ed.). McGraw-Hill Education.
3. James M. Gere and Barry J. Goodno (2012). Mechanics of Materials. (8th ed.). CL Engineering.
4. Jack Erjavec. (2009). Automotive Technology: A System Approach. (5th ed.). Delmar Cengage Learning.

SCB24703 - Chassis and Vehicle Dynamics
Pre-Requisite: SCB12303 - Automotive Engineering Fundamental
Synopsis:
The course introduces the topics in the area of vehicle suspensions, braking systems, suspension systems, steering systems and tires and wheels focusing on their concepts, functions, basic design and maintenance.
References:

1. Halderman, James, D. (2013). Automotive Chassis System. (6th ed.). Prentice Hall.
2. Halderman, James, D. (2015). Automotive Technology: Principles, Diagnosis, and Service. (5th ed.). Prentice Hall.
3. Halderman, James, D. (2013). Automotive Steering, Suspension, and Alignment. (6th ed.). Prentice Hall.

SCB24803 - Automotive Power Train
Pre-Requisite: SCB12303 Automotive Engineering Fundamental
Synopsis:
The course introduces the students to the area of power train and transmission system which are manual transmission, automatic transmission, drive lines, differentials and axles.
References:

1. Fischer, R., Küçükay, F., Jürgens, G., Najork, R., and Pollak, B. (2015). *The Automotive Transmission Book (Powertrain).* Springer.
2. Halderman, James, D. (2015). *Automotive Technology: Principles, Diagnosis, and Service. (5th ed.).* Prentice Hall.
3. Erjavec, J. and Thompson, R. (2015). *Automotive Technology: A Systems Approach. (6th ed.)*. Clifton Park (NY), USA: Cengage Learning.
4. Erjavec, J. (2005). TechOne: *Manual Transmission*. Delmar.
5. Erjavec, J. (2005). TechOne: *Automatics Transmission*. Delmar.

SCB24403 - Finite Element Application
Pre-Requisite: SCB12103 Engineering Mechanics, SSB10203 Engineering Mathematics 2
Synopsis:
The course covered on analysis such as structure stress analysis, dynamic, thermal and nonlinear problem. This emphasize is on modelling, meshing, interpretation of results and reports documentation as practice for analyst scope.
References:

1. Logan, D, L. (2012). *A First Course in the Finite Element Method (5th ed.).* USA: Cengage Learning.
2. Ellobody, E., Feng, R. and Young, B. (2014). *Finite Element Analysis and Design of Metal Structures*. Butterworth Heinemann.
3. Kumar, S. (2012). *Finite Element Method: Theory, Software, and Practice*. India: Studium Press Pvt. Ltd.
4. Rao. S. S. (2011). *The Finite Element Method in Engineering*. Elsevier

SCB24203 - Internal Combustion Engine
Pre-Requisite: SCB 23603 Thermal Science, SCB 24603 Fluid Mechanics
Synopsis:
The course will introduce the students to internal combustion engines, working principle, their efficiency and pollutants emission. It looks at the various emerging power technologies in the automotive industry and the current and alternatives fuels and combustion processes. Choices of fuel and the design of efficient engine operating parameters and their products will be discussed
References:

1. Internal Combustion Engine Fundamentals, Heywood, J.B. McGraw Hill, 1988.
2. Internal Combustion Engine, Applied Termoscience, Ferguson, C.R., John Wiley & Sons, 2001.
3. Engineering Fundamentals of the Internal Combustion Engine, 2nd Ed, Pulkrabek W. W., Prentice Hall, 2004.

SCB24503 - Engineering Materials
Pre-Requisite: SCB23302 - Fundamentals of Materials Science
Synopsis:
The course examines the different types of materials used in the automotive industry, including metals, ceramics and composites. Selection of the appropriate material for a variety of applications will be discussed in terms of the material properties, ease of manufacture and performance in the anticipated service environment. Case studies will be used to demonstrate the design principles used when using each of these materials for automotive applications.
References:

1. Callister, W.D. & Rethwisch, D.G. (2014). Materials Science and Engineering: An Introduction, (9th ed.). Hoboken (NJ): John Wiley & Sons.
2. Moniz, B.J. (2012). Metallurgy. (5th ed.). America Technical Publishers Inc.
3. Askeland, D.R.; Phule, P.P. & Wright W. J. (2011). The Science and Engineering of Materials. Stamford, USA: Cengage Learning.
4. Budinski G.K., Budinski M. K. (2010). Engineering Materials: Properties and Selection. (9th ed.). USA: Prentice Hall Press.
5. Kalpakjian, S. & Schmid, S.R. (2007). Manufacturing Processes for Engineering Materials. (5th ed.). Singapore: Prentice Hall.
6. Upadhyaya, G.S. (2006). Materials Science and Engineering. Viva Books Private Limited.

SCB35403 - Vibration and Noise
Pre-Requisite: SCB12103 Engineering Mechanics
Synopsis:
This course will provide an introductory view of the fundamentals and principles of mechanical vibration. Students will learn the basics of the formulation of the equations of motion for single and multi-degree of freedom systems as well as continuous systems such as beams and plates. These equations will be solved and applied to various engineering problems.
References:

1. Magd Abdel Wahab. (2008). *Dynamics and Vibration: An* introduction. (1st ed.). (NJ): John Willey and Sons Inc.
2. Harris C. M. (2002). *Shock and Vibration Handbook*. (5th ed.). New York: Mc-Graw Hill.
3. Goldman, S. (1999). *Vibration Spectrum Analysis: A Practical Approach* (2nd ed.). Industrial Press Corp.
4. Wowk, V. (1994). *Machinery Vibration: Balancing.* New York: Mc-Graw Hill.
5. Wowk, V. (1991). *Machinery Vibration: Measurement and Analysis.* New York: Mc-Graw Hill.

SCB35503 - Internal Combustion Engine
Pre-Requisite: SCB23603 Thermal Science, SCB24603 Fluid Mechanics
Synopsis:
The course will introduce the students to internal combustion engines, working principle, their efficiency and pollutants emission. It looks at various emerging power technologies in the automotive industry and the current and alternatives fuels and combustion processes. Choices of fuel and the design of efficient engine operating parameters and their products will be discussed.
References:
1. Ferguson, C.R. and Kirtpatrick, A.T. (2015). *Internal Combustion Engines: Applied Thermosciences,* (3rd ed.). Wiley.
2. Gupta, H.N. (2013). *Fundamentals of Internal Combustion Engines*. (2nd ed.). New Delhi: PHI Learning Private Limited.
3. Heywood, J.B. (1988). *Internal Combustion Engine Fundamentals.* USA: McGraw-Hill.

SCB35603 - Machine Component Design
Pre-Requisite: SCB23103 Strength of Materials
Synopsis:
The course about the types of automotive components such as gear, bolt & nuts, shaft, clutch, brakes, bearing and etc. under different types of loading and the methods on designing for strength and the selection criteria.
References:
1. Shigley J.E. & Mischke. (2015). *Mechanical Engineering Design*. (10th ed.). New York: Mc Graw-Hill.
2. Juvinall, Robert C. (2010). *Fundamentals of Machine Component Desig*n (4th ed.). Hoboken (New Jersey): John Willey & Sons.
3. Hamrock, Bernard J. (2002). *Fundamentals of Machine Elements.* (2nd ed.). New York: Mc Graw-Hill.
4. A.Collins, Jack. (2002*). Mechanical Design of Machine Elements and Machines*. Hoboken (New Jersey): John Willey & Sons.
5. Norton, Robert L. (2000). *Design of Machinery: Introduction to The Synthesis and Analysis of Mechanisms and Machines*. (3rd ed.). New York: Mc Graw-Hill.

SCB48203 - Automotive Structure
Pre-Requisite: Nil
Synopsis:
The structural design concept, monologue structures, chassis frame structures, general loads on vehicle, analysis and design of chassis frames, analysis and design of automotive structures using Simple Structural Surfaces (SSS), load and stress analysis in panels and frame members, introduction to vehicle crashworthiness.
References:
1. Advanced Strength and Applied Stress Analysis, Budynas, R.G., McGraw Hill, 1999.
2. An Introduction to Modern Vehicle Design, mJulian Happian-Smith, Butterworth Heinemann, 2002.
3. Race Car Vehicle Dynamics, WF Miliken & DL Miliken, SAE International, 1995.

SCB36103 - Automotive Design Engineering
Pre-Requisite: SCB12403 Engineering Drawing and CAD
Synopsis:
Introduction to concept of creative, critical, analytical and concept idea for modelling and development of model by process of sketching and modelling. The ability to develop mock-up emphasizing on exterior and interior design of automotive parts, perform design calculation and justification.
References:
1. David G. Ullman. (2015). Mechanical Design Process. (5th Ed). McGraw Hill
2. George E. Dieter. (2012). Engineering Design. (5th Ed). McGraw-Hill
3. James E. Duffy. (2014), Modern Automotive Technology, (8th Edition), Goodheart-Wilcox.

SCB36203 - Automotive Structure
Pre-Requisite: SCB12102 Fundamental of Materials Science, SCB23103 Strength of Materials.
Synopsis:
The course covered on the structural design concept, monocoque structures, chassis frame structures, general loads on vehicle, analysis and design of chassis frames. The problem solving examined in analysis and design of automotive structures used Simple Structural Surfaces (SSS), load and stress analysis which included the panels and frame members. The course also explored into the introduction to vehicle crashworthiness.
References:
1. Donald E. Malen (2011). *Fundamentals of Automobile Body Structure Design*. SAE International.
2. Jason C Brown. A John Robertson. Stan T Serpento. (2011). *Motor Vehicle Structures*. Oxford: Butterworth Heinemann.
3. Curtis, H.D. (2003). *Fundamentals of Aircraft Structural Analysis*. USA: McGraw Hill.
4. Julian Happian-Smith. (2002). *An Introduction to Modern Vehicle Design*. Oxford: Butterworth Heinemann.
5. Donaldson, B.K. (2002). *Analysis of Aircraft Structures: An Introduction*. USA: McGraw Hill

SCB47103 - Automotive Aerodynamics
Pre-Requisite: Nil
Synopsis:
Introduction to Vehicle Refinement, Characteristics of sound, Exterior noise and control, Interior noise and control, Vehicle ride improvement, Introduction to and fundamentals of road vehicle aerodynamics, aero-acoustics, and vehicle aerodynamic design.
References:
1. Barnard, R.H. (2010). *Road Vehicle Aerodynamic Design*. (3rd ed.). Hertfordshire, UK: MechAero Publishing.
2. McBeath, S. (2006). *Competition Car Aerodynamics: A Practical Handbook*. (2nd ed.). UK: J.H Haynes & Co Ltd.
3. Katz, J. (2003). *New Directions in Race Car Aerodynamics: Designing for Speed (Engineering and Performance)*. Bentley Publisher.
4. Hucho, W. (1998). *Aerodynamics of Road Vehicles.* (4th ed.). Society of Automotive Engineers Inc. USA: Warrendale.

SCB47803/ SCB44304 - Automotive Ergonomics
Pre-Requisite: Nil
Synopsis:
This module covers the important aspects on ergonomics concepts and practices. Students will first be introduced to ergonomics in general, musculoskeletal system of human body, engineering anthropometry, biomechanical bases of ergonomics, work physiology. This module will also expose students to anthropometric data for vehicle design, vehicle's interior layout, manual materials handling, work-tool design, man-machine systems, occupational environments, thermal, light, noise and vibration. At the end of the module, will able to do ergonomic assessment of workplace, implementation of ergonomics program.
References:
1. Guastello, Stephen J. (2013). *Human Factors Engineering and Ergonomics a Systems Approach.* Lawrence Erlbaum Associates.
2. R.S. Bridger. (2009). *Introduction to Ergonomics.* (3rd ed.). Boca Raton: CRC Press,
3. K.H.E. Kroemer. (2001). *Ergonomics: How to Design for Ease and Efficiency.* (2nd ed.). Englewood Cliffs. NJ: Prentice Hall.
4. Christopher D. Wickens. (2004). *Introduction to Human Factors Engineering.* Upper Saddle River, N.J.: Pearson Prentice Hall

SCB 47204 - Heat Exchanger Design
Pre-Requisite: SCB23603 Thermal Science, SCB24603 Fluid Mechanics
Synopsis:
Review of heat transfer by conduction, convection and radiation is given. The design applications developed concentrate on more realistic mixed mode or complex heat transfer, e.g. fins (radiator and heat sinks for automotive electronic components, compact heat exchangers), flat plate solar collectors, heat exchangers, etc. The assessed portion of the course will be a heat exchanger design exercise.
References:
1. Faiza M Nasir, (2011), SCB 48403 Heat Exchanger Design: Lecture Notes, (1st ed.)
2. Cengel, Y., (2006), Heat and Mass Transfer, A Practical Approach (3rd ed.): McGraw-Hill.
3. F.P Incropera and D.P. DeWitt (2007), Fundamentals of Heat and Mass Transfer, (6th Ed), New York, John Wiley & Sons.
4. T.L Bergman, A.S Lavine, F.P. Incropera, D.P. Dewitt (2011), Introduction to Heat Transfer (6th ed), Wiley.
5. D. Pitts, L.E.Sissoms (2011), Schaum's Outline of Heat Transfer, (2nd ed.) McGraw-Hill.

SDB24103 - Design for Plastics & Elastomer
Pre-Requisite: SDB 12103 - Computer Aided Design & Modelling
Synopsis:
This course covers the basic product design using plastic and elastomer including the construction of different concept in design selection. The design of plastics products is developed by considering the material selection, appearances, and other criteria in design guidelinesIt includes the application of CAD software in designing product and application of others method in designing.
References:
1. Paul A Tres, Designing Plastic Parts for Assembly, Carl Hanser Verlag GmbH & Co. KG Publishing (2014)
2. Robert A. Malloy, Plastic part design for injection moulding an introduction, Hanser Publishers (2011).
3. Rosato, Dominick V., Plastics engineered product design (2003), Elsevier
4. Rosato, Dominick V.; Rosato, Donald V.; Rosato, M.G. (2001). Plastics Design Handbook, Springer - Verlag.

SDB35103 - Design for Sheet Metal Forming
Pre-Requisite: SDB 12103 - Computer Aided Design & Modelling
Synopsis:
This subject focus on application of sheet metal forming process (bending, drawing, ironing, spinning, shearing and blanking etc.) and formability of metals in sheet metals forming. It is also cover the description of tools and die (progression die, stage die, transfer die), friction and lubrication, type of die materials that participate in the forming process, spring-back, force calculation, part defect and equipment in forming process
References:
1. S. Kalpakjian, S. Schmid. Manufacturing Engineering and Technology. 7th Edition. Pearson Prentice Hall. 2014.
2. Ivana Suchy. Handbook of Die Design. 2nd ed. McGraw-Hill. 2006
3. S. L. Semiatin. ASM Handbook Volume 14B Metalworking: Sheet Metal Forming. ASM 2008.
4. James G. Bralla. Design for Manufacturing Handbook. 2nd ed. McGraw-Hill.1999

SDB36103 - Machine & Mechanism Design
Pre-Requisite: SCB 11103 - Engineering Mechanics
Synopsis:
The subject will involve the study of kinematics analysis, planar rigid body motion, mass moment of Inertia, introduction to mechanisms, planar mechanisms, mechanisms analysis. Students will be involved in design of parts and mechanism including calculations to solve real engineering problems.

References:

1. Russell C. Hibbeler, Engineering Mechanics: Dynamics. 14th Ed. Pearson. 2016.
2. Shigley J.E. & Mischke. Mechanical Engineering Design, 10th Ed. Mc Graw-hill. 2014
3. David H. Myszka, Machines and mechanisms, 4th ed. New Jersey: Prentice Hall. 2011

SDB23103 - Computer Aided Design & Modeling
Pre-Requisite: SCB12403 Engineering Drawing and CAD
Synopsis:
This subject will focus on introduction and understanding of the CAD environment for modelling of parts, components and systems. Features and techniques will be taught for effective and efficient methods and also exposure will be given for understanding the engineering features in the CAD system. Modelling will be taught in 2D & 3D solid modelling and assembly. At the end of the subject, the subject will describe on how to create detail drawing of various designed parts
References:

1. Louis Gary Lamit, Creo Parametric 2.0, 1st ed. United State of America, USA: Cengage Learning. 2014
2. Michael J. Rider, Designing with Creo Parametric, 1st ed. New York, NY: McGraw-Hill Education. 2013
3. David S. Kelley, Pro Engineer Wildfire 5.0 Instructor, 5th ed. New York, NY: McGraw-Hill Education. 2010

SDB23403 - Ergonomics and Human Factors
Pre-Requisite: Nil
Synopsis:
This module covers the important aspects on ergonomics concepts and practices. Students will first be introduced to ergonomics in general, musculoskeletal system of human body, engineering anthropometry, biomechanical bases of ergonomics, work physiology. This module will also expose students to anthropometric data for vehicle design, vehicle's interior layout, manual materials handling, work-tool design, man-machine systems, occupational environments, thermal, light, noise and vibration. At the end of the module, will able to do ergonomic assessment of workplace, implementation of ergonomics program.
References:

1. Guastello, Stephen J, (2013). ***Human Factors Engineering and Ergonomics a Systems Approach***. Lawrence Erlbaum Associates.
2. Gavriel Salvendy (2012). Handbook of Human Factors and Ergonomics. 4th Ed., John Wiley & Sons, Inc.
3. R.S. Bridger (2009). Introduction to Ergonomics. 3rd Ed., CRC Press.
4. Shrawan Kumar (2007). Biomechanics in Ergonomics. 2nd Ed., CRC Press, Taylor & Francis Group.

SDB24303
Engineering Design Process
Pre-Requisite: SDB 12103 - Computer Aided Design & Modelling
Synopsis:
The topic covers approach towards basic design skills, methodology and basic product construction. The application of engineering sketching, model construction and technical documentation is added to their understanding.
References:

1. David G. Ullman; The Mechanical Design Process; 5th ed. Boston: McGraw Hill Series in Mechanical Engineering. 2015.
2. Yousef Haik, Tamer M. Shahin; Engineering Design Process; 2nd ed. Stamford, USA: Cengage Learning. 2010.
3. Richard G. Budynas; Shigley's Mechanical Engineering Design; 9th ed. New York:Mcgraw-Hill Series in Mechanical Engineering. 2011

SDB47303 - Introduction to Oil and Gas Industry
Pre-Requisite: Nil
Synopsis:
The course is aimed at introducing to students the various aspects of the oil and gas industry, both upstream and downstream, and making them aware of the role of various disciplines throughout the life cycle of petroleum.
References:

1. J. Hilyard (2012). The Oil & gas Industry: A non-technical guide, USA, PennWell Corp.
2. Norman J. Hyne (2012). *Nontechnical Guide to Petroleum Geology, Exploration, Drilling & Production*, (3rd Ed), USA, PennWell Corp.
3. H. Baron (2010), *The Oil and Gas Engineering Guide*, Editions Technip.
4. M. Raymond, W.L.Leffler (2006), *Oil & Gas Production in Nontechnical Language*, Oklahoma, PennWell.

SDB47403 - Applied Computational Fluid Dynamics
Pre-Requisite: SCB 23603 Thermal Science, SCB 24603 Fluid Mechanics, SCB 24403 - Finite Element Method
Synopsis:
This course will provide core knowledge of the fundamentals of CFD, and an introduction to the methods and analysis techniques used in CFD. It also provides an introduction to the use of commercial CFD packages to analyse flow and heat transfer in problems of practical engineering interest. The emphasis of the course is on the use of CFD as a virtual fluid laboratory. By studying a variety of flow situations students will develop a better intuition of fluid mechanics more quickly than is possible with traditional analytical approaches. At the end of the course students will understand the process of developing a geometrical model of the flow, applying appropriate boundary conditions, specifying solution parameters, and visualizing and analysing the results. Through the course study, students will also become conscious of the limitations of CFD and develop an appreciation for the factors limiting the accuracy of CFD solutions.

References:
1. Tu, J., Yeo, G.H. and Liu C. (2013), Computational Fluid Dynamics: A Practical Approach, (2nd Ed.) Butterworth-Heinemann (an imprint for Elsevier) UK.
2. Raynald löhner. Applied Computational Fluid Dynamics Techniques, 2nd ed. England: John Wiley & Sons Inc. 2008

COURSE OFFERED BY MANUFACTURING SECTION (DIPLOMA)

SMD11302 - Basic Fitting
Pre-Requisite: Nil
Synopsis:
This subject introduces the students with the knowledge of hand tools and its usage techniques for common practice in basic fitting such as marking, scribing, measuring, sawing, drilling and bending.
References:
1. Kalpakjian, S., Schmid, S. R., & Sekar, K. S. (2016). Manufacturing: Engineering and Technology. Melbourne, Victoria, Australia: Pearson Australia.
2. Bruce J. Black (2015). Workshop Processes, Practices and Materials (5th Edition). Routledge.

SMD12103 - Conventional Machining
Pre-Requisite: Nil
Synopsis:
Conventional machining involved the process of removing material specifically metal to produce desired shape and geometry with accurate dimensions. It is fundamental for students to gain skill of manual machining to understand the concept and the techniques of material removal before proceed with advance machining.
References:
1. Kalpakjian, S., Schmid, S. R., & Sekar, K. S. (2016). **Manufacturing: Engineering and Technology**. Melbourne, Victoria, Australia: Pearson Australia.

SMD24803 - CNC Lathe
Pre-Requisite: Nil
Synopsis:
CNC Lathe is one of the subjects focuses on integration of machining process (programing, machine set-up and usage, program transfer, work piece preparation, etc.) and characteristics of the material performed by CNC lathe machine. Students will be exposed to the tools, tool holders and devices to refer the shapes, type of materials that participate in the machining process, clamping, safety during operations and identify machine components requiring usage or first level maintenance (filters, lubrication devices, protections and etc.)
References:
1. CNC Lathe Fagor Manual
2. Kalpakjian, S., Schmid, S. R., & Sekar, K. S. (2016). **Manufacturing: Engineering and Technology**. Melbourne, Victoria, Australia: Pearson Australia.

SMD23603 - CNC Milling
Pre-Requisite: Nil
Synopsis:
This subject focuses on integration of machining process (programming, machine set-up and usage, program transfer, workpiece preparation, etc) and characteristics of the material performed by CNC milling machine. It is also covering the description of tools, tool holders and devices to refer the shapes, type of materials that participate in the machining process, clamping, safety during operations and identify machine components requiring usage or first level maintenance (filters, lubrication devices, protections and etc).
References:
1. CNC Lathe Fagor Manual
2. Kalpakjian, S., Schmid, S. R., & Sekar, K. S. (2016**). Manufacturing: Engineering and Technology**. Melbourne, Victoria, Australia: Pearson Australia.

SMD24502 - Welding Technology
Pre-Requisite: Nil
Synopsis:
This subject focus on the process or procedure to perform joining or fabricate the metal.
References:
1. Christena, S. B. (2014)**. Learn to Weld: Beginning MIG Welding and Metal Fabrication Basics**. Crestline Books.

SPD23202 - Electro Discharge Machine (EDM)
Pre-Requisite: Nil
Synopsis:
This course focuses mainly on the understanding of Electro Discharge Machining (EDM) processes. It involves combination of theories and practical practices to ensure students understand the concept, function and application of the machines involved. Student will be learning on generating programming manually using Fanuc Sapt Cut i Software, selecting the suitable materials, tools and various types of machining process using either EDM Die Sinker or EDM Wire Cut. Safety practice will be given top priority. At the end of this course, the students should be able to distinguish the processes, machineries, materials, function ability, tools, cost and the technology involved in the non-traditional EDM machining processes.
References:
1. Kalpakjian, S., Schmid, S. R., & Sekar, K. S. (2016). **Manufacturing: Engineering and Technology**. Melbourne, Victoria, Australia: Pearson Australia.

SPD23102 - Operations Management
Pre-Requisite: SPD 11102 - Dimensional Metrology
Synopsis:
Production and operations managers ensure that quality products are produced and delivered as quickly and cost effectively as possible. Operations Management prepares students with the expertise to manage people and processes in order to produce high-quality goods and services that meet customer demand.
References:
1. Heizer, J., Render, B, & Munson, C. (2016). **Operations Management: Sustainability and Supply Chain Management**, Global Edition (12th ed). Pearson Education Limited.
2. Md. Zain R, et al. (2015). **Operations Management** (1st ed). K.Lumpur: Oxford University Press.

SPD24202 - Production System Design
Pre-Requisite: Nil
Synopsis:
This subject is mainly focus on the design of goods, process strategy, location strategies, layout strategies, human resources and job design.
References:
1. Heizer, J., Render B. & Munson, C. (2016). **Operations Management Sustainability and Supply Chain Management** (12th ed). Pearson.

SPD35402 - Inventory Management & Scheduling
Pre-Requisite: Nil
Synopsis:
The subject focuses on forecasting, inventory management, aggregate planning, material requirement planning and lean productions.
References:
1. Heizer, J., & Render B. (2014). Operations Management Sustainability and Supply Chain Management (11th ed). New Jersey: Pearson Education International.
2. Ostwald, P.F., & Munoz, J. (2008). **Manufacturing Processes & Systems**. (9th ed.) Delhi: Wiley.

SPD35102 - Industrial Safety & Health
Pre-Requisite: Nil
Synopsis:
This subject provides the student with the rationale for providing an occupationally safe and healthy work environment for employees. They will be introduced to one of the most important aspects in OSH which is Hazard Identification, Risk Assessment, and Risk Control (HIRARC). This will help students to learn on the strategies to deal with OSH issues in the workplace.
References:
1. Goetsch, D.L. (2018) **Occupational Safety and Health for Technologist, Engineers and Managers** (9th ed.). Pearson Education: United States.
2. Akta Keselamatan dan Kesihatan Pekerjaan 1994 (AKTA 514)
3. Guidelines for Hazard Identification, Risk Assessment and Risk Control (HIRARC) (2008). Department of Occupational Safety and Health, Ministry of Human Resources, Malaysia.

SPD35203 - Quality & Continuous Improvement
Pre-Requisite: Nil
Synopsis:
This course mainly focuses on the continuous quality improvement and its improvement techniques and tools. The students will be exposed on the application of Statistical Quality Control (SQC), and other quality improvement tools for example, Total Productive Maintenance (TPM) and Kaizen. The content also covers the implementation of quality standard, which is ISO9000, and the classification of costs for quality.
References:
1. Heizer J., Render, B, & Munson, C. (2016). **Operations Management: Sustainability and Supply Chain Management**, Global Edition (12th ed). Pearson Education Limited.
2. Montgomery, D.C. (2012). **Statistical Quality Control: A Modern Introduction**. (7th ed. International Student Version) John Wiley & Sons.

SPD35502 - Engineering Ethics
Pre-Requisite: Nil
Synopsis:
This course aims to produce graduates who understand its role as responsible engineering technologist in developing the community. Therefore, this program aims to create awareness on engineering ethics and human values, to understand social responsibility of engineering technologist and to appreciate ethical dilemma while discharging duties in professional life.
References:
1. Fledderment C. B. (2012). **Engineering Ethic** (4th ed). Prentice Hall.
2. Harris C.E., Pritchard M.S., Rabins M.J. (2019). **Engineering Ethics Concepts and Cases** (6th ed). Cengage Learning

COURSE OFFERED BY MANUFACTURING SECTION (BACHELOR)

SFB 12102 - Workshop Technology
Pre-Requisite: Nil
Synopsis:
This subject is a combination between theory and practical of many workshops' tools and machines. This subjects also will provide knowledge about the safety practices in engineering mechanical workshop, measurement and measuring tools, introduction to theory and practices of machining processes, turning, milling drilling and grinding, introduction to theory and practices of fabrication processes and also bench working. Before doing practical tasks in the workshop the students shall be introduced with the theoretical part on the machining process such as workbench tools, metrology tools, conventional and CNC machines as well.
References:

1. Richard R. Kibbe, Warren T. White, Roland O. Meyer, Kelly Curran, Jon Stenerson Hardcover (2014). **Machine Tool Practices** (10th Edition), Prentice Hall.
2. Graham T Smith, Industrial Metrology – **Surfaces and Roundness**.
3. Joe Martin,Tabletop Machining: **A Basic Approach to Making Small Parts on Miniature Machine Tools.**
4. Ted Busch, Roger Harlow, Richard L. Thompson, **Fundamentals of Dimensional Metrology**, 5th Ed

SFB 23202 - Professional Engineering Practice and Ethics
Pre-Requisite: Nil
Synopsis:
In this course, the student learnt the ethics and professionalism in engineering. It cover of responsible professionals and corporations, moral reasoning and codes of ethics, Moral frameworks, Engineering as Social Experimentation, commitment to Safety and Global Justice.
References:

1. Charles B. Fledderment (2012). Engineering Ethic Fourth Edition, Prentice Hall.
2. Mike W. Martin Roland Schinzinger (2010). Introduction to Engineering Ethics 2nd Edition, McGraw-Hill Higher Education.
3. Govindarajan M, Natarajan S, Senthil Kumar V. S (2004.) Engineering Ethics", Prentice Hall.
4. Charles E. Harris, Michael S. Pritchard and Michael J. Rabins, (2009). Engineering Ethics Concepts and Cases", Cengage Learning.
5. Laura P. Hartman and Joe Desjardins (2013) "Business Ethics: Decision Making for Personal Integrity and Social Responsibility" Mc Graw Hill education, India Pvt. Ltd.,New Delhi

SFB 23102 - Production Planning
Pre-Requisite: Nil
Synopsis:
This subject devoted into several parts which includes.
- Forecasting – provides important insight on forecasting as well as information on how to develop and monitor forecast.
- Production system design – covers product design (a brief of service design as well), capacity planning process selection, facility layout, design of work systems, and location planning and analysis.

Inventory management and scheduling – relates to the management and control of inventories, and scheduling. The basic issues are how to best manage resources to effectively match supply and demand.
References:

1. William J Stevenson (2012), Operation Management, Eleventh edition, New York: McGraw-Hill/Irwin.
2. Jay Heizer and Barry Render (2010). Operation Management,10th Edition. Pearson Education International. New Jersey.
3. Roaimah Omar. Operation Management. Pearson Prentice Hall. Malaysia.
4. R. Panneerselvam. Production and Operations Management. 2nd Edition. Prentice Hall of India. New Delhi.

SFB 35103 - Manufacturing Technology
Pre-Requisite: SCB 23603 Thermal Science, SCB 24603 Fluid Mechanics
Synopsis:
This subject consists of various types of manufacturing process and equipment for metal and plastic used in manufacturing production such as sand casting, investment casting and die casting. Student will also be introduced to rolling process, forging, extrusion, drawing, sheet metal forming and metal spinning.
References:

1. Kalpakjian & Schmid (2013). Manufacturing Engineering & Technology, Published by Prentice Hall

SFB 35203 - Manufacturing System
Pre-Requisite: Nil
Synopsis:
The focus of this course will be on production and assembly techniques to decide appropriate production methods. Emphasis will be on organizing the integrating manufacturing technologies such as Group Technology (GT), and other automated methods into a viable manufacturing process. The communication and impact of the new process on other functions in a manufacturing organization and operation will be examined
References:
1. Mikell P. Groover (2014). Automation, Production Systems, and Computer-Integrated Manufacturing (4th Edition) by Prentice Hall.
2. Groover M. P. 1996. Fundamental of Modern Manufacturing. Prentice-Hall. McMahon, C. and Browne, J., 1998. CAD CAM Principles, Practice and Manufacturing Management. 2nd ed. Addison Wesley

SFB 35703 - Metrology
Pre-Requisite: Nil
Synopsis:
This course focuses study on the principles and methods of measurement, testing and inspection with emphasizing on the use of dimensional metrological instruments within automotive components for geometric characteristics, surface finish and coordinate measurement
References:
1. Farago, F. T., & Curtis, M. A. (2014). Handbook of Dimensional Measurement. (5th ed.). USA: Industrial Press Inc.
2. Dotson, C. L. (2016). Fundamentals of Dimensional Metrology. (6th ed.). New York: Thomson Delmar Learning.
3. Handout Basic Metrology: The Fundamental Science and Practices of Measurement. (2010) 3rd ed.
4. Kennedy et. al., (2009). Inspection and Gauging. 6th ed. USA: Industrial Press Inc.
5. Ikuta, T. (2005). Metrology Handbook. (1st ed). Singapore: Mitutoyo Asia Pacific Pte. Ltd

SFB36102 - Automotive Safety
Pre-Requisite: Nil
Synopsis:
This subject provides the students with the knowledge on automotive safety legislation, and the process involved in developing the legislations. It also covers the tests conducted in order to establish limitations in the rule-making process. Besides, the students will be exposed on different types of collisions, basic criteria in designing vehicle and also pedestrian protection.
References:
1. Lothar Wech and Ulrich W. Seiffert (2007). Automotive Safety Handbook, Second Edition, Professional Engineering Publishing, London, UK
2. Matthew Huang (2002). Vehicle Crash Mechanics, CRC Press, SAE International.

SFB 36203/ SFB36202 - Industrial Safety & Health
Pre-Requisite: Nil
Synopsis:
This subject provides the student with the rationale for providing an occupationally safe and healthy work environment for employees. They will be introduced to one of the most important aspects in OSH which is Hazard Identification, Risk Assessment, and Risk Control (HIRARC). This will help students to learn on the strategies to deal with OSH issues in the workplace.
References:
1. David L. Goetsch (2014). Occupational Safety and Health for Technologist, Engineers and Managers, 8th Edition. Prentice Hall.
2. Jeremy Stranks (2005). The Handbook of Health and Safety Practice, 7th Edition. Prentice Hall.
3. Akta Keselamatan dan Kesihatan Pekerjaan 1994 (AKTA 514)
4. Guidelines for Hazard Identification, Risk Assessment and Risk Control (HIRARC), Department of Occupational Safety and Health, Ministry of Human Resources, Malaysia. 2008

SFB 36303 - CNC Technology
Pre-Requisite: Nil
Synopsis:
This subject focuses on integration of machining process (programming, machine set-up and usage, program transfer, workpiece preparation, etc) and characteristics of the material performed by CNC lathe machine. It is also covering the description of tools, tool holders and devices to refer the shapes, type of materials that participate in the machining process, clamping, safety during operations and identify machine components requiring usage or first level maintenance (filters, lubrication devices, protections and etc)
References:
1. Steven Schmid, Serope Kalpakjian, Manufacturing Processes for Engineering Materials 5th Edition.
2. E. Paul Degarmo, J.T Black, Ronald A. Kohser. Materials and Processes in Manufacturing. Eighth Edition.
3. CNC Lathe Fagor Manual.
4. CNC Milling Fagor Manual.
5. CNC Programming Handbook. 2003. Comprehensive Guide to Practical CNC Programming. Industrial Press Inc. 2nd Edition

SFB 36403 - Operation Research
Pre-Requisite: Nil
Synopsis:
This subject covers the introduction of operations research, linear programming, transportation models and network models. It emphasizes on problem solving and decision-making skills in engineering applications
References:
1. Hamdy A. Tah (2010). Operations Research: An Introduction Prentice Hall,
2. Hillier, Frederick S. And Lieberman, Gerald J. Introduction to Operations Research, 8th Edition. McGraw-Hill. Boston MA. 2005
3. Ecker, Joseph G. And Kupferschmid, Michael. Introduction to Operation Research. Kriger Publication Company.

SFB 23302 - Production Operation Management
Pre-Requisite: Nil
Synopsis:
This subject is mainly focus on the operation strategy, operation and productivity, project management and supply-chain management.
References:
1. Heizer, J., & Render B. (2014). Operation Management (11th ed). New Jersey: Pearson Education International.
2. Ostwald, P.F., & Munoz, J. (2008). Manufacturing Processes & Systems. (9th ed.) Delhi: Wiley.

SFB 47703 - Quality Engineering
Pre-Requisite: Nil
Synopsis:
The identification and interpretation of the concept of two main areas in quality which are quality management and quality control. It covers the quality management areas such as quality standards (ISO9000, ISO14000, ISO/TS16949), and costs of quality. This subject also covers on the application of crucial elements of quality control for example Six Sigma and process capability study. Other than that, it places emphasis on Lean Processes, additional quality techniques (TQM, QFD, TPM, Acceptance Sampling, Reliability, and TRIZ), and the core tools used in automotive industry.
References:
1. Montgomery, D.C. (2012). Statistical Quality Control: A Modern Introduction. (7th ed. International Student Version) John Wiley & Sons.
2. Heizer, J., & Render B. (2014). Operations Management Sustainability and Supply Chain Management (11th ed.). New Jersey: Pearson Education International.
3. Juran, J.M, & De Feo. J.A. (2010). Juran's Quality Handbook: The Complete Guide to Performance Excellence (6th ed.). McGraw-Hill Education.
4. Yasuhiro, M. (2011). Toyota Production System: An Integrated Approach to Just-In-Time (4th ed.). Productivity Press

SFB 47303 - CAD/CAM Rapid Prototyping
Pre-Requisite: SCB12403 Engineering Drawing and CAD
Synopsis:
Introduction to basic principle of CAD/CAM system & generating model and programming, basic. Utilizing modeling software and various rapid prototyping (RP) systems, creating a number of parts, assemblies and engineering drawings. Investigate the advantages and disadvantages of current RP technologies
References:
1. P.N. Rao (2012) CAD/CAM: Principles and Applications, 3rd Edition, Published by Tata McGraw-Hill Education Pvt. Ltd.
2. Tien-Chien Chang, Richard A. Wysk, Hsu-Pin Wang (2006). Computer-Aided Manufacturing, 3rd Edition, Pearson Education, Inc.
3. Chua C. K., Leong K. F. and Lim C. S (2003). Rapid Prototyping: Principle and Applications, 2nd Edition, World Scientific Publishing Co. Pte. Ltd.
4. Kunwoo Lee (1999). Principles of CAD/CAM/CAE Systems, Addison Wesley Longman, Inc

COURSE OFFERED BY ELECTRICAL ELECTRONICS & AUTOMATION SECTION (DIPLOMA)

SRD 11403 - Electrical Technology
Pre-Requisite: Nil
Synopsis:
This course introduces to students the basic electrical circuits encompass the SI units, elements in electrical circuit and how to apply the Ohm's Law and Kirchhoff's law in electrical circuits. Besides the students will be exposed to the methods of analysis in the resistive circuits and alternating current circuits. They are also being introduced to the energy storage elements and the general form solutions for the first order circuits, techniques of DC and AC circuit analysis.
References:
1. R. L. Boylestad (2016), Introductory Circuit Analysis, 13th Edition. Prentice Hall, New York.
2. Edward Hughes (2012), Electrical and Electronics Technology, 11th edition. Pearson Education Limited
3. Thomas L. Floyd (2014), Principles of Electric Circuits: Conventional Current Version, 9th Edition, Pearson Education Limited

SRD 12102 - Electronics Devices
Pre-Requisite: SRD 11403– Electrical Technology
Synopsis:
This course introduces to students the basic electronic device's structure, configuration and construction, the course will cover the fundamentals of electronic devices involving diodes, bipolar junction transistors and field effect transistors. The contents encompass from devices structure, operation, characteristic for certain application circuit.
References:
1. Boylestad, R. and Nashelsky. (2013), Electronic Devices and Circuit theory, 11th Edition. Prentice Hall.
2. Floyd, T.L. Electronic Devices (2011), 9th Edition. Prentice Hall. 2011.

SRD 12603 - Industrial Computing
Pre-Requisite: Nil
Synopsis:
This course emphasis on programming using high level language such as Language C and Visual Basic. It begins with an introduction to programming, which covers a lot with software definitions, algorithm and flowchart. Next, it continues with creating the computer programs using Language C and Visual Basic by applying program control structure, functions, arrays and file I/O. Then, the subject will describe more on Human Machine Interface (HMI) application. The subject also includes individual lab task and group projects
References:
1. Jeri R. Hanly, Elliot B. Koffman, 2013, C Program Design for Engineers, Second Edition, Pearson.
2. Keith Davenport, Micheal Vine, 2015, C Programming for the Absolute Beginner, Third Edition, Cengage Learning.
3. Gary J. Bronson, 2013, C++ for Engineers and Scientist. Fourth Edition: Cengage Learning.
4. Gaurav Sharma, 2015, Fundamentals of C Programming Language. First Edition, Renu Publishers.

SRD 25103 - Control Systems
Pre-Requisite: Nil
Synopsis:
This subject cover identification of concept and knowledge about control system. It is also focus on the application and establishment of knowledge about the control and regulation of system which is by controlling the process and operation of the system to optimize the system performance. The students will be exposed to tuning methods suitable for difference type of industrial process control.
References:
1. Norman S. Nise. Control System Engineering. New York: John Wiley & Sons. 2015.
2. Schaum's Outline of Feedback and Control Systems 2nd Edition: McGraw-Hill Education. 2013

SRD24202/ SRD25203 - Sensor Technology
Pre-Requisite: Nil
Synopsis:
The course provides knowledge on theoretical fundamentals, working principles, and applications of the relevant sensor classes. It emphasizes more on analysis behaviour of the sensor and transducer based on physics theory
References:
1. Edward Sazonov, Michael R. Neuman, Wearable sensors: fundamentals, implementation and applications, Amsterdam: AP, Academic Press is an imprint of Elsevier, 2014.
2. Jon S. Wilson, Sensor Technology Handbook. Newnes, USA,2005.
3. Clarence W. de Silva. Boca Raton, FL, Sensors and actuators: Control Systems Instrumentation. CRC Press,2007

SRD 23103 - Digital Electronics
Pre-Requisite: Nil
Synopsis:
This course covers fundamental topics in digital systems such as number systems, Boolean Algebra, Boolean Expression, K-Maps and basic logic gates. It includes certain techniques such as Boolean Techniques, De-Morgan Theorem, Karnaugh Map method for involves in logic simplification. Design activities include combinational logic circuit and understand the operation of various types of flip flops and also basic operation for counter and register
References:
1. Floyd. (2009). Digital Fundamentals. New Jersey: Pearson International Edition: Prentice Hall
2. Ronald J Tocci. (2010). Digital Systems, Principles and Applications, Fundamentals. 11th edition. London: Prentice Hall.
3. P.W Chandana Prasad. (2002). Digital Systems Fundamentals. Petaling Jaya: Prentice Hall.

SRD23503 - Electrical Machines
Pre-Requisite: Nil
Synopsis:
This subject is to study on the basic operation, construction and characteristics of the electrical machine. It also focused on the machine protection mainly on the safety aspect of the motor and specific procedure on controlling the motor. This subject also explains and elaborate the controlling system of the motor by direct current and alternating current in terms of its wiring design i.e. installation (star-delta), single and three phase and also some basic calculations of the electrical magnitudes
References:
1. Jeff Keljik, Electricity 4 AC/DC Motors, Controls, and Maintenance, 10th edition. U.S.A: Delmar, Cengage Learning,2013
2. Stephen L. Herman, Electric Motor Control, 10th edition. USA: Delmar, Cengage Learning, 2014
3. Jeff Keljik, Electricity 3 Power Generation and Delivery, 10th edition. U.S.A: Delmar, Cengange Learning, 2013
4. Stephen L. Herman, Understanding Motor Controls, 3rd edition. USA: Delmar, Cengage Learning,2016
5. Gary Rockis and Glen A. Mazur, Electrical Motor Controls for Integrated Systems, American Technical Publishers (ATP),2013

SRD23303 - Electronics Circuit Design
Pre-Requisite: Nil
Synopsis:
The labs involved the application of CAD software to develop PCB layout. The list of experiments is circuit design using CAD, PCB design using CAD, project setup, parts construction, footprint design, postprocessing, dual power supply, and mixed analog/digital circuit. Students also do a mini project design using CAD software to generate the Gerber files. This Gerber files are used to fabricate the PCB.
References:
1. Kraig Mitzner (2007). Complete PCB Design using Orcad Capture and Layout. Oxford (UK): Elsevier.
2. R. Khandpur (2006). Printed Circuit Boards: Design, Fabrication, and Assembly (McGraw-Hill Electronic Engineering), 2nd ed. New York: McGraw-Hill, - McGraw-Hill electronic engineering series.

SRD25303 - Microcontroller
Pre-Requisite: Nil
Synopsis:
This module provides students with theory and application knowledge about microcontroller, and all the associated devices such as the I/O's, memories, RAM, ROM and etc. This subject will expose the students to hardware and software design and interfacing aspects of single-chip microcontroller which are used as controller in embedded systems
References:
1. M. Ali Mazidi, J. Gillispie Mazidi, Rolin D. MCkinlay (2008), The 8051 Microcontroller and Embedded Systems using Assembly and C. Prentice Hall. 2nd edition.
2. Milan Verle (2008), PIC Microcontrollers. mikroElektronika. 1st edition

SRD35603 - Electronics Instrumentation
Pre-Requisite: SRD25203 – Sensor Technology
Synopsis:
This course introduces students to some major views in theories and its application for signal conditioning and instrumentations. It will examine some key principles of measurement and the importance of signal conditioning and instruments in process industries. The course will also provide an understanding to calibrate the instruments according to its specifications
References:
1. Alan S. Morris, Measurement and Instrumentation, Theory and Application: Elsevier, 2012.
2. N. Mathivanan,PC-Based Instrumentation Concepts and Practice. PHI Learning Private Limited, 2011.
3. S Tumanski, Principles of Electrical Measurement, United State: CRC Press, 2006.
4. Clyde F. Coombs JR. Electronic Instrumentation Handbook, United State: McGraw-Hill, 1999.

SRD35203 - Power Electronics and Drive
Pre-Requisite: SRD23503 - Electrical Machines
Synopsis:
This subject is mainly focus on two fields that is the identification and analyzation of the power electronics devices and circuits used in industry and the electrical machines control devices in industrial installation. The students need to identify the different parts and components, different types of used electrical machines and relating their function to the other components, which make up the automation process.
References:
1. Muhammad H. Rashid, Power Electronics: Circuits, Devices & Applications,4th edition, Pearson education,2013.
2. Austin Hughes, Bill Drury, Electric Motors and Drives: Fundamentals, Types and Applications, 4th edition, Elsevier,2013

SRD23703 - Internet of Things (IoT) Technology
Pre-Requisite: Nil
Synopsis:
This course will cover industry 4.0 framework and architecture. Key elements in industry 4.0 such as system integration, simulation, big data, Internet of Things, additive manufacturing and autonomous robotic were cover briefly in 5 major topics. Besides, the architecture of industry 4.0 implementations which is consist of 5 levels configuration level, cognition level, Cyber level, Conversion level, connection level include in this designed course.
References:
1. Schwab, K. (2017). The fourth industrial revolution. Great Britain: Portfolio Penguin.
2. Waher, P. (2015). Learning Internet of Things: Explore and learn about Internet of Things with the help of engaging and enlightening tutorials designed for Raspberry Pi. Birmingham: Packt Publishing.
3. Casagrande, L., Gruber, V., & Marcelino, R. (2016). IoT and the industry 4.0: principles and educational applications. Saarbrücken: Scholars Press.
4. Agnihotri, R., & New, S. (2017). Industry 4.0 data analytics. Middletown: Rajesh Agnihotri, Samuel New.

SED12303 - Electrotechnics
Pre-Requisite: Nil
Synopsis:
This subject focused on the basic wiring practice for both industrial and residential installations. It also covers the basic knowledge on the electro-technical devices and instruments, especially in performing the required installations by using the appropriate tools. In addition, it is also to provide students with clear and refined understanding of electrical installations and electrical control system. The students will be guided in the usage and fixtures of electrical items, as well as wiring installations. Health and safety aspects are incorporated into the subject to provide students with knowledge on performing work functions with due care.
References:
1. Herman, Stephen L. (2012), Electrical Wiring Industrial, 15th Ed. Cengage Learning.
2. Guidelines for Electrical Wiring in Residential Building (2008), Suruhanjaya Tenaga

SED 24103 - Industrial Automation
Pre-Requisite: SED23203 – Pneumatic & Hydraulic Systems
Synopsis:
The course is purposely designed and focuses on identification and interpretation on technical documentation concerning manufacturing systems of machinery and industrial equipment. It also covers the description and techniques used for on-plant assembly, maintenance and repair of machinery and industrial equipment and their associated systems. For the application task, the students will be exposed and familiarized with the Flexible Manufacturing System (FMS 200) and robotics including the usage of hardware and software.
References:
1. Terry Bartelt, Industrial automated systems: instrumentation and motion control, Clifton, Park, N.Y: Delmar/Cangage Learning, 2011.
2. Khaled Kamel, Eman Kamel, Programmable logic controllers: industrial control, New York: McGraw-Hill Education, 2014.
3. S. Brian Morriss, Automated manufacturing systems: actuators, controls, sensors and robotics, New York: Glencoe, 1995
4. KUKA Roboter GmbH, Robot Programming 1. Kuka System Software 8.2, 2011
5. Omron PLC Manual Handout & CX Programmer manual
6. Mitsubishi PLC Manual Handout & GX Developer manual

SED23203 - Pneumatic & Hydraulic Systems
Pre-Requisite: Nil
Synopsis:
This subject is purposely designed and focuses on identification and interpretation of pneumatic & hydraulic systems in term of design and practical, troubleshoot the malfunction systems and analysis the operation of the systems.
References:
1. Andrew Parr, 2011, Hydraulics and Pneumatics: A technician's and engineer's guide. 3rd Ed. Amsterdam; Boston: Butterworth-Heinemann
2. S.Ilango and V. Soundararajan, 2011, Introduction to Hydraulics and Pneumatics. 2nd ed. PHI Learning Private Limited

COURSE OFFERED BY ELECTRICAL ELECTRONICS & AUTOMATION SECTION (BACHELOR)

STB12203 - Electric Circuit Analysis
Pre-Requisite: Nil
Synopsis:
This course introduces to students the basic electrical circuits encompass the SI units, elements in electrical circuit and how to apply the Ohm's Law and Kirchhoff's law in electrical circuits. Besides the students will be exposed to the methods of analysis in the resistive circuits and alternating current circuits. They are also being introduced to the energy storage elements and the general form solutions for the first order circuits, techniques of DC and AC Circuit Analysis.
References:
1. R. L. Boylestad (2014). Introductory Circuit Analysis. 12th Edition. New York: Prentice Hall.
2. Thomas L. Floyd (2014). Principles of Electric Circuits: Pearson New International Edition: Conventional Current Version (9th Edition) Pearson Education Limited.

STB12202 - Electrical & Electronics Laboratories
Pre-Requisite: Nil
Synopsis:
The practical tasks involved the electrical practice workshop and electronic workshop. The list of experiments are electrical wiring, installation of main circuit, one-way switch, two-way switch, ceiling fan, outlet socket, electrical bell and air-conditioner. Students also do the soldering, mini project design on proto board, and circuit design on PCB
References:
1. Electronics fundamentals: a systems approach / Thomas L. Floyd, David M. Buchla. L.Upper Saddle River, New Jersey: Pearson, 2014.
2. Electronics Fundamentals: Circuits, Devices & Applications. Floyd T. L. and Buchla D. M. 8th edition. New York: Prentice Hall. 2009.
3. Electric Circuits Fundamentals. Floyd T. L. 8th edition. New York: Prentice Hall. 2009

STB23102 - Electronic Devices
Pre-Requisite: STB12203 Electric Circuit Analysis
Synopsis:
This course introduces to students the basic electronic devices structure, configuration and construction, the course will cover the fundamentals of electronic devices involving diodes, bipolar junction transistors and field effect transistors. The contents encompass from devices structure, operation, characteristic for certain application circuit.
References:
1. Boylestad, R. and Nashelsky. (2011), Electronic Devices and Circuit theory, (11th edition). Prentice Hall.
2. Schuler, Charles A. (2012) Electronics: Principles and Applications (8th Edition). Glencoe/McGraw-Hill.
3. Richard C. Dorf, James A. Svoboda. (2013), Introduction to Electric Circuit (9th Edition). Wiley.
4. Floyd, T.L. Electronic Devices (2011), 9th Edition. Prentice Hall

STB24403 - Digital Electronics
Pre-Requisite: Nil
Synopsis:
This course develops digital design experience with particular reference to the implementation of digital systems in recognizing various number systems, Boolean algebra, Boolean expression, K-maps, logic gates, digital IC technology, combinational logic network, fundamental of sequential logic and flip-flop, counter, shift register, memory and programmable logic devices.
References:
1. Floyd (2014), Digital Fundamentals. (11th edition). New Jersey: Pearson International Edition: Prentice Hall
2. Ronald J Tocci. (2010). Digital Systems, Principles and Applications, Fundamentals (11th edition), London: Prentice Hall.
3. P.W Chandana Prasad. (2002). Digital Systems Fundamentals. Petaling Jaya: Prentice Hall.

STB24303 - Computer Programming
Pre-Requisite: Nil
Synopsis:
This subject emphasis on programming using high level language such as Language C. It begins with basic introduction to programming which covers software definitions, SDLC, and algorithm. Then, it continues with developing computer programs using C Language including elementary of data structure, pre-processor directive, inputs and outputs, program control structure, functions, arrays, pointers, data structure and file input output. The subject also includes individual assignment and group projects.
References:
1. Jeri R. Hanly, Elliot B. Koffman (2013). C Program Design for Engineers (2nd Edition), Pearson.
2. Keith Davenport, Micheal Vine (2015) C Programming for the Absolute Beginner (3rd Edition), Cengage Learning.
3. Gary J. Bronson (2013) C++ for Engineers and Scientist (4th edition), Cengage Learning.
4. Gaurav Sharma, 2015, Fundamentals of C Programming Language (1st edition), Renu Publishers.

STB35103 - Pneumatics and Hydraulics System
Pre-Requisite: SCB 24603 Fluid Mechanics
Synopsis:
The module should prepare the student to recognize, design, and explain of pneumatic and hydraulic systems in automation system. Troubleshooting and fault finding also included.
References:
1. Andrew Parr, 2011, Hydraulics and Pneumatics: A technician's and engineer's guide. 3rd Ed. Amsterdam; Boston: Butterworth-Heinemann.
2. S.Ilango and V. Soundararajan, 2011, Introduction to Hydraulics and Pneumatics. 2nd ed. PHI Learning Private Limited

STB35203 - Automotive Electrical and Electronic Systems
Pre-Requisite: Nil
Synopsis:
The course will introduce the students to the following topics in the area of automotive electrical and electronics which are consists of batteries, charging system, starting and ignition systems, engine management, accessories and overview of automotive electrical and electronics systems.
References:
1. Barry Hollembeak (2011), Automotive Electricity and Electronics Classroom Manual, 5th Edition, Thomson Delmar Learning.
2. James D. Halderman (2011), Automotive Electricity and Electronics, 3rd Edition, Pearson Prentice Hall

STB35803 - Electric Machine Fundamentals
Pre-Requisite: STB12203 - Electric Circuit Analysis
Synopsis:
This subject is purposely designed to study the basic operation, construction and characteristics of the electrical machine as well as focused on the protection of the electrical machine mainly the motor for the safety purposes and how to control the motor by using specific procedure. This subject also explains and elaborate the controlling system of the motor by direct current and alternating current in terms of wiring design i.e. installation (star-delta), single and three phase and calculation using formula
References:
1. Stephen L. Herman (2014), Electric Motor Control, 10th edition. USA: Delmar, Cengage Learning
2. Jeff Keljik (2013), Electricity 4 AC/DC Motors, Controls, and Maintenance, 10th edition. U.S.A: Delmar, Cengage Learning
3. Jeff Keljik (2013), Electricity 3 Power Generation and Delivery, 10th edition. U.S.A: Delmar, Cengange Learning
4. Stephen L. Herman (2016), Understanding Motor Controls, 3rd edition. USA: Delmar, Cengage Learning
5. Gary Rockis and Glen A. Mazur (2013), Electrical Motor Controls for Integrated Systems, American Technical Publishers (ATP)

STB35903 - Microcontroller and Interfacing
Pre-Requisite: STB12203 - Electric Circuit Analysis
Synopsis:
One of the important components in embedded systems such as mechatronics systems is microcontroller. This subject will expose the students to hardware and software design and interfacing aspects of single-chip microcontroller which are used as controller in automotive systems.
References:
1. M. Ali Mazidi, J. Gillispie Mazidi, Rolin D. MCkinlay (2008), The 8051 Microcontroller and Embedded Systems using Assembly and C. Prentice Hall. 2nd edition.
2. M. Ali Mazidi, Rolin D. MCkinlay, Danny Causey (2008), PIC Microcontroller and Embedded System: Using Assembly and C. Prentice Hall. 2nd edition.
3. Milan Verle, PIC Microcontrollers. mikroElektronika. 1st edition (2008)

STB35503 - Control Systems
Pre-Requisite: Nil
Synopsis:
This course introduces students to the fundamental ideas and definitions of control systems such as block diagrams, plants or processes, open loop and close loop control systems, transfer functions and transient and steady state responses. Students will be taught how to obtain mathematical models of actual physical systems such as electrical, mechanical, electromechanical and simple fluid flow systems. Methods of system representation such as block diagram representation and signal flow graphs will be examined. The students will also be exposed to techniques of analyzing control systems such as time domain analysis and stability. Finally, an introduction to the design and analysis of control systems using MATLAB will also be given.
References:
1. Norman S. Nise (2015). Control System Engineering. New York: John Wiley & Sons.
2. Schaum's. (2013). Outline of Feedback and Control Systems 2nd Edition: McGraw-Hill Education.

STB36103 - Programmable Logic Controller
Pre-Requisite: STB24403 Digital Electronics
Synopsis:
The subject is exposing students for the PLC system to be used in the automation system. The subject is more focused on using PLC hardware and software (programming system) as a domain to control actuators and electrical machine. Problem solving covers from basic application using timer and counter until the complex data processing using the analogue input and output applications.
References:
1. Glen A. Mazur William J. Weindorf (2011). Programmable Logic Controllers. (2nd Ed.). Orland Park, Illinois: American Technical Publisher.
2. Frank D. Petruzella (2005). Programmable Logic Controllers. (3rd Ed.). Avenue of the Americas (NY): McGraw-Hill International Edition.

STB36203 - Electronic Instrumentation Laboratories
Pre-Requisite: Nil
Synopsis:
This course introduces students to some major views in theories and its application for signal conditioning and instrumentations. It will examine some key principles of measurement and the importance of signal conditioning and instruments in process industries. The course will also provide an understanding to calibrate the instruments according to its specifications
References:
1. Alan S. Morris (2012), Measurement and Instrumentation, Theory and Application: Elsevier.
2. N. Mathivanan (2011). PC-Based Instrumentation Concepts and Practice. PHI Learning Private Limited.
3. S Tumanski (2006) Principles of Electrical Measurement, United State: CRC Press.
4. Clyde F. Coombs JR (1999). Electronic Instrumentation Handbook, United State: McGraw-Hill.

STB36303 - Power Electronics and Drives
Pre-Requisite: STB35803 Electric Machine Fundamentals
Synopsis:
The course will introduce students to the following topics in the area of power electronics: power switches and their characteristics, various types of power electronics converters, drives and its applications. Besides, the students will undertake, under supervision, laboratory experiments to analyse the switching behaviours as well as investigating the output behaviours of power electronics converter and drives.
References:
1. Muhammad H. Rashid (2013), Power Electronics: Circuits, Devices & Applications (4th edition), Pearson education.
2. Austin Hughes, Bill Drury (2013), Electric Motors and Drives: Fundamentals, Types and Applications, 4th edition, Elsevier.
3. M.D Singh, K.B Khanchandani (2007), Power electronics, 2nd Edition, The McGraw Hill companies.

STB47603 - Electric Vehicle System
Pre-Requisite: STB36303 - Power Electronics and Drives
Synopsis:
This subject will introduce the key topics for electric and hybrid vehicle systems such concepts, vehicle mechanics, energy sources, EV-drive train and complete EV- systems. Besides, the subject will also analyse technical requirements in EV design which includes series and parallel hybrid, energy requirements, efficiency and performance comparisons. Also expose the students with case studies of real and proposed EV vehicle as part of design process
References:
1. Seth Leitman & Bob Brant (2013), Build Your Own Electric Vehicle, Third Edition, McGraw Hill.
2. James Larminie & John Lowry (2012), Electric Vehicle Technology Explained, Wiley

STB47703 - Machine Vision
Pre-Requisite: Nil
Synopsis:
This subject will introduce the machine vision, image processing, segmentation, pattern recognition, detection, advance techniques and application of vision system in automotive.
References:
1. R.C. Gonzalez, Richard E. Woods (2007) Digital Image Processing, 3rd edition. Prentice Hall.
2. R.C. Gonzalez, Richard E. Woods and Steven L. Eddins. Digital Image Processing using MATLAB, 1st edition. Prentice Hall. 2004.
3. Milan Sonka, Vaclav Hlavac and Roger Boyle. Image Processing, Analysis, and Machine Vision. International Student Edition, Thomson, 2008.
4. Tomas Svoboda, Jan Kybic and Vaclav Hlavac, Image Processing, Analysis, and Machine Vision (A MATLAB Companion). International Student Edition, Thomson. 2008.

STB47103 - Digital Signal Processing
Pre-Requisite: Nil
Synopsis:
This subject introduces students to the fundamental principles of Digital Signal Processing includes the sampling theorems, z-transform, analysis of Linear Time-Invariant Systems, Discrete-Time Systems structures, Fourier Transform, Discrete Fourier Transform and Filter design.
References:
1. Monolakis D.G and V. K. Ingle, *Applied Digital Signal Processing*: 1st Edition. Cambridge University Press, 2012.
2. Mitra, S. K. *Digital Signal Processing: A computer-based Approach*, 4th Edition. Prentice Hall. 2009.

STB47803 - Introduction to Robotics
Pre-Requisite: Nil
Synopsis:
This course introduces about robotics technology that will include an introduction of robotics components/parts, robot characteristics and robot applications. The topics also expose a student with knowledge to evaluate robot for appropriate applications
References:
James W. Masterson Robert L. Towers & Stephen W. Fardo (2011), Robotics Technology., 2ed edition. The Goodheart-Willcox Company, Illinois

STB47503 - Artificial Intelligence
Pre-Requisite: Nil
Synopsis:
This subject is designed to introduce students to the concepts and techniques of Artificial Intelligence and its application i.e Expert System, Fuzzy Logic and Neural Network. The student will also learn on how to apply Fuzzy Logic approaches and Artificial Neural Network in their project work
References:
1. Stuart Russell and Peter Norvig. (2013). Artificial Intelligence: A Modern Approach. Pearson Inter. Ed.
2. Michael Kuhn (2013). Manual for the implementation of neural networks in MATLAB. GRIN Verlag.
3. Michael Negnevitsky. (2011). Artificial Intelligence a Guide to Intelligent Systems (3rd Edition), Pearson.

SAB12402 - Applied Electronics Laboratory
Pre-Requisite: Nil
Synopsis:
Students will be exposed to the use of basic measurement devices such as Multimeter, oscilloscope, function generator and electronic tools. The devices will be used in basic AC and DC circuit using passive elements to measure and analyze different types of circuit. To further improve the student's understanding, Electronic Design Automation (EDA) will be exposed to students so that they can simulate and analyze the essential criteria of a circuit before actually assembling the components on a prototype board.
References:
Thomas L. Floyd and David L. Buchla (2013) Electronics Fundamentals Circuits, Devices and Applications International Edition. Pearson Education Limited

SAB 12503 - Semiconductor Technology
Pre-Requisite: Nil
Synopsis:
The course will provide students with a glimpse into the semiconductor industry that has brought about the technology revolution. Because of the interdisciplinary nature of the subject, its content includes concepts from electrical engineering, chemical engineering and material science. The course outline can be divided to historical development and basic concepts, manufacturing methods and equipment, measurement methods, models and simulation, limits and future trends in technologies and models
At the end of this course, one should have a good understanding of the various processing techniques used to fabricate integrated circuits and microstructures. One should understand the theory of the individual, processes, how they are characterized, both electrically and structurally, and the interrelationship of these processes when combined to fabricate integrated circuits or microstructures.
References:
1. Campbell, S. A. (2012). Fabrication engineering at the micro and nanoscale (Vol. 4). New York: Oxford University Press.
2. Sze, S. M. (2012). Semiconductor devices: physics and technology. John Wiley & Sons.

SAB23103 - Analog Circuit Application 1
Pre-Requisite: Nil
Synopsis:
This course introduces the characteristics and applications of passive component. The chapters will include basic circuits using passive components, network theorems, transient response in dc circuit, resonance in ac circuit and analog filters. The understanding of concepts will be extended using software tools in practical lab sessions.
References:
1. Floyd, Thomas L. and David M. Buchla (2013) Analog Fundamentals: A Systems Approach. Pearson Education, Inc.
2. Adel S. Sedra & Kenneth C.Smith. (2014) *Microelectronic Circuits.* Oxford University Press, New York.

SAB 23203 - Introduction to VLSI and Fabrication
Pre-Requisite: Nil
Synopsis:
The course objective is to introduce the fundamental principles of VLSI (Very Large Scale Integrated) circuit design and layout, to cover the basic building blocks of large-scale CMOS digital integrated circuits, and to provide hands-on design experience using a professional IC design platform. The course topics include an overview of CMOS fabrication technologies, physical VLSI design issues (bottom-up design), basic CMOS logic gates, architectural building blocks and system design (top-down design), with a stronger emphasis on physical design principles. The IC design aspects will be reinforced with extensive laboratory exercises.
References:
1. Yuan Taur and Tak H. Ning (2013) Fundamentals of Modern VLSI Devices, 2nd Ed. Cambridge University Press
2. Erik Brunvand (2010) Digital VLSI Chip Design with Cadence and Synopsys CAD, Addison-Wesley
3. Neil Weste & David Harris (2011), CMOS VLSI Design: A Circuits and Systems Perspective, 4/E, Addison-Wesley

SAB 24203 - Signals and Systems
Pre-Requisite: Nil
Synopsis:
This course provides comprehensive lessons of both the theory and applications in signals, systems, and transforms. Students will be exposed to the mathematical background of signals and systems, including the Fourier transform the Fourier series, the Laplace transform, the discrete-time and the discrete Fourier transforms, and the z-transform.
References:
1. Charles L. Philips, John Parr & Eve Riskin (2013). Signal, Systems and Transforms. 5th Edition. Pearson
2. Hwei P, Hsu (2013), Schaum's Outline of Signals and Systems 3rd Edition, McGraw Hill Education

SAB24703 - Object Oriented Programming
Pre-Requisite: STB 24303 Computer Programming
Synopsis:
This course aims to be interactive hands-on workshop discussing on the related case study. Practical sessions will focus on encoding in C++ solutions to problems. These sessions are primarily aimed at addressing problems or questions and giving feedback. Most of programming implementation time will be in these sessions and student should come in prepared. Practical sessions will also be used for practical tests
References:
1. Vic Broquard (2014) C++ Object Oriented Programming. Broquard eBooks
2. Dorian P. Yeager (2014). Object-Oriented Programming Languages and Event-Driven Programming. Mercury Learning.

SAB24803 - Analog Circuit Application 2
Pre-Requisite: SAB 12103 Analog Circuit Application
Synopsis:
This course introduces the characteristics and applications of active components. The chapters will include basic circuits using active components. Applications and analysis using software for simulations and hardware for actual measurement using measurement devices will be exposed to the students. At the end of the course, students will be ready for electronic design in discrete component and integrated circuit.
References:
1. Adel S. Sedra & Kenneth C.Smith. (2014) *Microelectronic Circuits.* Oxford University Press, New York.
2. Floyd, Thomas L. and David M. Buchla (2013) Analog Fundamentals: A Systems Approach. Pearson Education, Inc

SAB 24503/ SAB 24102 - Sensor Technology
Pre-Requisite: Nil
Synopsis:
The course provides knowledge on theoretical fundamentals, working principles, and applications of the relevant sensor classes. It emphasizes more on analysis behaviour of the sensor and transducer based on physics theory.
References:
Clarence W. de Silva. (2015). Sensors and actuators: Control Systems Instrumentation 2nd Edition. CRC Press.

SAB 24603 - Applied Digital Electronics
Pre-Requisite: Nil
Synopsis:
This course develops digital design experience with particular reference to the implementation of digital systems in recognizing various number systems, Boolean algebra, Boolean expression, K-maps, logic gates, digital IC technology, combinational logic network, fundamental of sequential logic and flip-flop, counter, shift register, memory and programmable logic devices.
References:
1. Stephen Brown and Zvonko Vranesic (2014) Fundamentals of Digital Logic with Verilog Design 3rd Edition. Mc Graw Hill.

SAB35503 - Engineering Electromagnetics
Pre-Requisite: Nil
Synopsis:
Electromagnetics course is of fundamental importance to electrical and computer engineers. This course will provide all students with the fundamental concepts associated with electromagnetic and microwave circuit. Important topics include Maxwell's equations; electrostatic and magnetostatics fields; plane wave propagations; transmission lines. Successful completion of this course will allow students study more advanced topics in the area of microwave and radio-frequency (RF) such as antenna and microwave circuit design.
References:
1. Umran S. Inan, Aziz Inan, Ryan Said (2014). Electromagnetic Engineering and Waves, (2nd ed.). Prentice Hall
2. Branislav M. Notaros (2011). Electromagnetics. Prentice Hall

SAB36203 - Analog IC Design and Verification
Pre-Requisite: STB 12203 Electric Circuit Analysis, STB 23102 Electronic Devices
Synopsis:
Analog integrated circuits are critical blocks that permeate complex electronic systems. Analog circuits inevitably arise whenever those systems must interact with the analog world of sensors or actuators (including antennas, cameras, microphones, speakers, displays, lighting, motors, and many others), and when they must communicate using anything but the most rudimentary digital signals. Many applications have indeed replaced analog circuitry with their digital counterparts (such as digital audio).
However, when digitizing physical signals, analog-to-digital and digital-to-analog converters are always needed, together with their associated anti-aliasing and reconstruction filters. In addition, new applications continue to appear; their requirements demand the use of high-performance analog front ends, such as digital communication over wireline and wireless channels and micro sensor interfaces. Also, as integrated circuits integrate more functionality, it is much more likely that at least some portion of a modern integrated circuit will include analog circuitry to interface to the real world.
References:
1. Tony Chan Carusone, David A. Johns, Kenneth W. Martin (2011), Analog Integrated Circuit Design, 2nd Edition, John Wiley & Sons Inc.
2. P. Allen and D. Holberg (2012), CMOS Analog Circuit Design, 3rd edition, Oxford University Press.
3. R. Jacob Baker (2010), CMOS Circuit Design, Layout, and Simulation, 3rd Edition, IEEE Press Series on Microelectronic Systems.

SAB36403 - RF/ Microwave Circuits & Systems
Pre-Requisite: SAB 35503 Engineering Electromagnetics
Synopsis:
This course is to provide a thorough coverage of microwave concepts and theory based on fundamental principles of RF and microwave engineering. The course examines also microwave circuits and devices of practical importance. Lectures include electromagnetic theory, microwave waveguides, network analysis, impedance matching, couplers, filters, microwave oscillators, amplifiers, mixers and antennas.
References:
1. Frank Gustrau (2012), RF and Microwave Engineering: Fundamentals of Wireless Communications" 1st Edition. John Wiley & Sons
2. David M. Pozar (2011), Microwave and RF Design of Wireless Systems" 4th Edition. John Wiley & Sons

SAB36603 - Advanced Digital Design and FPGA
Pre-Requisite: SAB 24603 Applied Digital Electronics
Synopsis:
The teaching strategy is to facilitate learning through direct application of knowledge with real software and hardware tools in a laboratory environment using real case examples and assignment. In this class, the VHDL/Verilog tools and programming is used to provide hands-on learning which will allow students to understand and appreciate behavioral and structural modelling through simple examples. The programs are also debugged, simulated, and eventually demonstrated on FPGA hardware. During the labs, supervision is on hand to guide the students through the tools and help during common problems.
References:
1. David Romano (2016) Make: FPGAs: Turning Software into Hardware with Eight Fun and Easy DIY Projects, Maker Media Inc.
2. Peter Wilson (2016) Design Recipes for FPGAs, Second Edition: Using Verilog and VHDL 2nd Edition, Newnes.

SAB35103 - PCB Design
Pre-Requisite: Nil
Synopsis:
The labs involved the application of CAD software to develop PCB layout. The list of experiments is circuit design using CAD, PCB design using CAD, project setup, parts construction, footprint design, post-processing, dual power supply, and mixed analog/digital circuit. Students also do a mini project design using CAD software to generate the Gerber files. This Gerber files are used to fabricate the PCB.
References:
Simon Monk (2014) Make Your Own PCBs with EAGLE. McGraw-Hill Education.

SAB36103 - Applied Control Systems
Pre-Requisite: STB 35103 - Control System Theory
Synopsis:
The course is a continuation to subject control system theory that covers only analog control system. Applied Control System will focus more in digital control system and its implementation in real application. The course provides skills in developing a working embedded system for linear control system.
References:
1. Phillips, C. L., & Nagle, & T. Chakrabortty, H. (2014). Digital control system analysis and design. Prentice Hall Press.
2. Norman S. Nise. (2014) Control System Engineering. New York: John Wiley & Sons.

SAB36303 - Telecommunication System
Pre-Requisite: SAB 24203 Signal and System
Synopsis:
Telecommunication system subject is a fundamental importance for students that interests in the field of RF/ microwave technology. This subject is divided into 2 parts which is telecommunication fundamentals and telecommunication system. The telecommunication fundamental includes basic concepts of telecommunication, quality of service and impairments. It also discusses the transmission and switching concept of transmission. The telecommunication system will cover the technology aspect of the telecommunication which includes voice telephony, digital networks, radio systems, satellite communication, fibre optic communication, cellular system and voice-over IP.
References:
Roger L. Freeman. (2013), Fundamentals of Telecommunications (2nd Ed.), John Wiley & Sons.

SAB36503 - RFIC Design for Wireless Communication
Pre-Requisite: SAB 35503 Engineering Electromagnetics
Synopsis:
There is considerable interest in RFIC research due to the cost benefit of shifting as much of the wireless transceiver as possible to a single technology, which in turn would allow for a system on chip solution as opposed to the more common system on package. This interest is bolstered by the pervasiveness of wireless capabilities in electronics. RFIC design requires specialized and unique solutions beyond what a standard custom IC front-to-back design platform offers.
Traditionally, analog, mixed signal integrated circuits and RF systems design and simulations have been the key asset to serve these needs; however, the move to higher frequency bands, tighter on-chip integration, as well as within multi-chip modules assembled on printed circuit boards (PCBs) and latest wireless standards like LTE-Advanced (4G) or 802.11ac (WLAN) add new challenges to the underlying design platform. RFIC design includes thorough considerations of design techniques, modelling, simulation, analysis and verification solutions for a number of products to address the resulting requirements.
References:
1. Behzad Razavi (2011), RF Microelectronics, 2nd Edition, Prentice Hall Communications Engineering and Emerging Technologies Series.
2. P. Allen and D. Holberg (2012), CMOS Analog Circuit Design, 3rd Edition, Oxford University Press

STB36403 - Internet of Things (IoT) Technology
Pre-Requisite: Nil
Synopsis:
This course will cover industry 4.0 framework and architecture. Key elements in industry 4.0 such as system integration, simulation, big data, Internet of Things, additive manufacturing and autonomous robotic were cover briefly in 5 major topics. Besides, the architecture of industry 4.0 implementations which is consist of 5 levels configuration level, cognition level, Cyber level, Conversion level, connection level includes in this designed course.
References:
1. Schwab, K. (2017). The fourth industrial revolution. Great Britain: Portfolio Penguin.
2. Waher, P. (2015). Learning Internet of Things: Explore and learn about Internet of Things with the help of engaging and enlightening tutorials designed for Raspberry Pi. Birmingham: Packt Publishing.
3. Casagrande, L., Gruber, V., & Marcelino, R. (2016). IoT and the industry 4.0: principles and educational applications. Saarbrücken: Scholars Press.
4. Agnihotri, R., & New, S. (2017). Industry 4.0 data analytics. Middletown: Rajesh Agnihotri, Samuel New.

COURSE OFFERED BY ENGINEERING SECTION (DIPLOMA)

WQD10103 - Technical Mathematics 1
Pre-Requisite: Nil
Synopsis:
This course covers general mathematical components involving algebra, trigonometry and complex numbers. It emphasizes on developing students' competencies to prepare them for higher level mathematics.
References:

1. Mathematics Central Committee Universiti Kuala Lumpur. 2012. Technical Mathematics 1 Workbook (Modules Prepared by MCC UniKL). Pearson Custom Publishing: Singapore.
2. Stroud, K. & Booth, D. 2013. Engineering Mathematics (7th Ed). Palgrave Macmillan: UK.
3. Bird, J. 2014. Engineering Mathematics (7th Ed). Routledge: Oxford.
4. Peterson, J. 2012. Technical Mathematics (4th Ed). Delmar Cengage Learning: New York.

WQD10203 - Technical Mathematics 2
Pre-Requisite: WQD10103 Technical Mathematics 1
Synopsis:
This course covers intermediate level of mathematics involving trigonometry, functions, limits, differentiation, and integration. This is to further develop students' competencies in calculus and prepare them for higher level mathematics in science & engineering technology courses.
References:

1. Mathematics Central Committee Universiti Kuala Lumpur. 2012. Technical Mathematics 1 Workbook (Modules Prepared by MCC UniKL). Pearson Custom Publishing: Singapore.
2. Stroud, K. & Booth, D. 2013. Engineering Mathematics (7th Ed). Palgrave Macmillan: UK.
3. Bird, J. 2014. Engineering Mathematics (7th Ed). Routledge: Oxford.
4. Peterson, J. 2012. Technical Mathematics (4th Ed). Delmar Cengage Learning: New York.

SSD 11203 - Engineering Science
Pre-Requisite: Nil
Synopsis:
This course is designed to enhance the basic skill in engineering from their previous studies. Students will be exposed on motion in one dimension, Newton's law of motion, work and energy, rotational motion, momentum and impulse and analyze in terms of mechanics, structure and flow of an object.
References:

1. W. Bolton (2015). Engineering Science 6th Edition. England: Routledge; (2 April 2015).
2. D. Halliday & R. Resnick (2014). Fundamentals of Physics 10th Edition. John Wiley & Sons.
3. J. Cutnell (2015). Introduction to Physics 10th Edition. John Wiley & Sons

SSD20202 - Engineering Statistics
Pre-Requisite: Nil
Synopsis:
This subject will cover basic statistics and applied statistics involving descriptive statistics, probability, normal distribution, introduction to quality and control charts. It emphasizes on developing students' statistical skills in solving engineering problems.
References:

1. Montgomery, Douglas C and Runger, George C. *Applied Statistics and Probability for Engineers, 6th Edition*. John Wiley & Sons. 2013.
2. Navidi, William. *Statistics for Engineers and Scientists, 4th Edition*. Mc-Graw Hill. 2015
3. Montgomery, Douglas C. *Design and Analysis of Experiments, 8th Edition*. John Wiley & Sons. 2012

Hayter, Anthony. *Probability and Statistics for Engineers and Scientists, 4th Edition*. Brooks/Cole, Cengage Learning. 2013

COURSE OFFERED BY ENGINEERING SECTION (BACHELOR)

SMB10103 - Mathematics for Engineers 1
Pre-Requisite: Nil
Synopsis:
This module offers a fundamental study of linear algebra: solving system of equations by using matrix methods such as Cramer's Rule, Gauss Elimination Method, Gauss Jordan Elimination Method and inverse matrix, as well as evaluating the eigenvalues and eigenvectors. A recall on Complex Numbers is provided as a pre-requisite to convert complex numbers in various forms. The concept of vectors and its properties which are related to the students' field are also provided. This course also provides the fundamental of multi-variable functions involving partial derivatives and multiple integrals.
References:

1. John Bird, (2018), Higher Engineering Mathematics, 8th Edition. Routledge Stroud, K.A. (2013). Engineering Mathematics, 7th Edition. Industrial Press Inc
2. Anton, H., Biven, I.C. and Davis, S. (2009). Calculus, 9th Edition. Wiley.
3. Hass, J., Weir, M.D. and Thomas, G.B. (2006). University Calculus. Addison Wesley.

SMB10303 - Mathematics for Engineers 2
Pre-Requisite: SMB10103 Mathematics for Engineers 1
Synopsis:
This course covers ordinary differential equations and partial differential equations. It also provides advanced level engineering mathematics such as Laplace Transforms and Fourier Series in solving various engineering problems.
References:

1. John Bird, (2014), Higher Engineering Mathematics,7th Edition.Routledge
2. Kreyszig, E. (2010). Advanced Engineering Mathematics, 10th Edition. Wiley.
3. Zill, D.G. and Wright, W.S. (2009). Advanced Engineering Mathematics, 4th Edition. Jones & Bartlett Publishers.
4. Nagle, R.K., Saff, E.B. and Snider, A.D. (2008). Fundamentals of Differential Equations and Boundary Value Problems, 5th Edition. Pearson Education Inc.

SMB10102 - Electrical Engineering
Pre-Requisite: Nil
Synopsis:
This course will cover basic electrical components, concepts of AC and DC electrical analysis, single & 3 phase, and electrical machine.
References:

1. Floyd, Thomas L. (2010). Principles of Electric Circuits Conventional Current Version. Upper Saddle River: Prentice Hall.
2. Alexander, Charles K., & Sadiku, Matthew N.O. (2009). Fundamentals of Electric Circuits. Boston: McGraw Hill.
3. Boylestad, Robert L. (2010). Introductory Circuit Analysis. Upper Saddle River, NJ.: Prentice Hall.

SMB11103 - Engineering Mechanics 1
Pre-Requisite: Nil
Synopsis:
The topics that are 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 force members and evaluating the geometric aspect of the centroid and moment of inertia of a composite body.
References:

1. R.C Hibbeler, "Engineering Mechanics: Statics and Dynamics", Prentice Hall, New Jersey, 14th Edition, 2015.
2. Beer, F. P., "Mechanics for Engineers: Statics", McGraw-Hill, New York, 10th Edition, 2012
3. Meriam, J. L., "Engineering Mechanics: Statics", John Wiley & Sons, Inc., New York, Vol. 1, 6th Edition, 2008

SMB10202 - Engineering Practice and Professionalism
Pre-Requisite: Nil
Synopsis:
This course introduces and exposes students to the practices and professionalism that essentials for engineers. It highlights the student on obligations and responsibilities of engineers in practicing engineering professionally furthermore create awareness among students towards self-continuous development. This course incorporates study skills, problem solving and critical thinking skills, decision-making and lifelong learning skills as well as project planning, teamwork and leadership that are applicable to the profession of engineering. Effective technical writing and speaking development in the context of academic and professional engineering will also be provided. The students will also be exposed to the accreditation and internationalization of engineers, aspects of Engineering Accreditation (EAC) and Washington Accord in engineering education of higher learning institution.
References:

1. R.B.Landis. (2013) Studying Engineering: A Road Map to a Rewarding Career, 4th Edition. Discovery Press.
2. J. Butterworth, and G. Thwaites, (2013) Thinking Skills: Critical Thinking and Problem Solving. 2nd edition. Cambridge University Press.
3. S. P. Robbins, D. A. DeCenzo and M. A. Coulter (2016) Fundamentals of Management. 10th edition. Pearson Education.

SMB10203 - Materials Engineering

Pre-Requisite: Nil

Synopsis:

This subject focuses on metal & non-metal materials used in manufacturing processes in terms of their physical, chemical, mechanical and technological properties.

References:

1. Callister, W.D. and Rethwisch, David G., "Materials Science & Engineering: An Introduction", John Wiley & Son Inc. 9th Ed. 2013.
2. D.R, Askeland, P.P., Fulay and W.J. Wright, "The Science and Engineering of Material, 6th Edition, CENGAGE Learning, 2010

SMB12103 - Engineering Drawing and CAD

Pre-Requisite: Nil

Synopsis:

This course will include projection and dimensioning in drawing using CAD, integrate standard terminology, abbreviation and conventional representation, sectional view, isometric view and assembly drawing

References:

1. David L. G., et al. (2015). Technical drawing and engineering communication, 7th edition. Clifton Park, NY: Delmar Cengage Learning.
2. SolidWorks Education Edition 2012, SolidWorks 2012 Training Manual, SolidWorks 2012 Online Tutorial
3. Frederick E. G., et al. (2009). Technical drawing, Upper Saddle River, NJ: Pearson Prentice Hall.
4. Paul R., et al. (2010). AutoCAD 2010 in 2D and 3D a modern perspective. Boston: Prentice Hall.

SMB13102 - Metrology & Engineering Workshop

Pre-Requisite: Nil

Synopsis:

This course focuses on the principles of precision engineering to the use of measuring instruments and manufacturing equipment where accuracy, repeatability and stability are primary functional requirements as well as the principles of metrology, geometric dimensioning & tolerancing (GD&T), and uncertainty analysis. In addition, basic operation of conventional machine also will be emphasized.

References:

1. Krar, S. F. 2010. Technology of Machine Tools. USA: McGraw-Hill.
2. Dotson, C.L., 2006. Fundamentals of Dimensional Metrology. 5th ed. New York: Thomson Delma Learning.
3. Kalpakjian, S. 2013. Manufacturing Engineering and Technology. Singapore: Prentice Hall.
4. Chapman, W. A. J. 2001. Workshop Technology (Part 1 & 2). USA: Viva Books.

SMB20103 - Computer Programming for Engineers

Pre-Requisite: Nil

Synopsis:

This course introduces concepts and techniques for creating computational solutions to problems in engineering and science. The essentials of computer programming are developed using the programming languages, with the goal of enabling the student to use the computer effectively in subsequent courses. Programming topics include problem decomposition, control structures, recursion, arrays and other data structures; file I/O, graphics, and code libraries. Applications will be drawn from numerical solution of ordinary differential equations, root finding, matrix operations, searching and sorting, simulation, and data analysis. Good programming style and computational efficiency are emphasized. Although no previous programming experience is assumed, a significant time commitment is required.

References:

1. Delores M. Etter, (2013). Engineering Problem Solving with C. Pearson.
2. Stephen J. Chapman, (2013). MATLAB Programming with Applications for Engineers. Cengage Learning.
3. Rama Reddy and Carol Ziegler. (2010). C Programming for Scientists and Engineers with Applications. Jones and Bartlett Publishers.
4. Jeri R. Hanly and Elliot B. Koffman. (2014). C Program Design for Engineers. Pearson.

SMB20203 - Mathematics for Engineers 3

Pre-Requisite: Nil

Synopsis:

This course will cover the analytical knowledge and techniques in preparing students to apply them to other scientific and engineering principles. The topic has been designed to enable students to use vector calculus in solving engineering problems.

References:

1. John Bird, (2014), Higher Engineering Mathematics,7th Edition. Routledge
2. K.A. Stroud, (2011), Advanced Engineering Mathematics, 5th Edition, Palgrave
3. Anton, Biven & Davis, (2012), Calculus, 10th Edition, Wiley Hass, Weir & Thomas (2011), University Calculus, Pearson

SMB21303 - Thermodynamics 1

Pre-Requisite: SMB10103 Mathematics for Engineers 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, entropy balance and exergy.

References:

1. Cengel, Yunus A., Boles, Michael A. (2011), Thermodynamic: An Engineering Approach, 7th Ed, McGraw-Hill, New York, U.S.A.
2. Srivastava, R.C. (2007), Thermodynamics a core course, Prentice-Hall.
3. Turns, Stephen R. (2006), Thermodynamics Concepts and applications, New York, U.S.A.: Cambridge University Press

SMB20102 - Electronics Engineering

Pre-Requisite: Nil

Synopsis:

This course introduces concepts and techniques for creating computational solutions to problems in engineering and science. The essentials of computer programming are developed using the programming languages, with the goal of enabling the student to use the computer effectively in subsequent courses. Programming topics include problem decomposition, control structures, recursion, arrays and other data structures; file I/O, graphics, and code libraries. Applications will be drawn from numerical solution of ordinary differential equations, root finding, matrix operations, searching and sorting, simulation, and data analysis. Good programming style and computational efficiency are emphasized. Although no previous programming experience is assumed, a significant time commitment is required.

References:

1. Floyd, Thomas L. (2013). Electronic Devices Electron Flow Version. Upper Saddle River, NJ.: Pearson.
2. Boylestad, Robert L., & Nashelsky, Louis. (2009). Electronic Devices and Circuit Theory. Upper Saddle River, NJ.: Pearson /Prentice Hall
3. Paynter, Robert T. (2006). Paynter's Introductory Electronics Devices and Circuits. Englewood Cliffs, NJ.: Prentice Hall.
4. Floyd, Thomas L. (2009). Digital Fundamentals. Upper Saddle River, NJ.: Pearson.

SMB21104 - Solid Mechanics

Pre-Requisite: SMB11103 Engineering Mechanics 1

Synopsis:

This course will cover the analysis and design of structural members subjected to tension, compression, torsion, and bending, including the fundamental concepts mentioned. Other topics of general interest are the
transformations of stress and strain, combined loadings, stress concentrations, deflections of beams, and stability of columns.

References:

1. Hibbeler R. C. Mechanics of Materials, 10th Edition. New Jersey, USA: Prentice Hall. 2016
2. James M. Gere & Barry J. Goodno, Mechanics of Materials, 9th Edition. Mason, OH, USA: Cengage Learning. 2017
3. Madhukar Vable, Mechanics of Materials. New York, USA: Oxford. 2002

SMB22203 - Design 1

Pre-Requisite: Nil

Synopsis:

The topic covers approach towards basic design skills, methodology and basic product construction. The application of engineering sketching, model construction and technical documentation were added for their understanding.

References:

1. Ulrich, K.T., Eppinger, S.D. (2015), Product design and development, 6th Ed. McGraw Hill
2. Dieter, G.E. (2012), Engineering design, McGraw Hill.
3. SolidWorks Education Edition 2012, SolidWorks 2012 Training Manual, SolidWorks 2012 Online Tutorial Chapman, W. A. J. 2001. Workshop Technology (Part 1 & 2). USA: Viva Books.

SMB23103 - Manufacturing Processes

Pre-Requisite: SMB10203 Materials Engineering

Synopsis:

This course will cover the general introduction of manufacturing activities such as design process, material selection, manufacturing process, manufacturing assembly, etc. Students will be provided with knowledge to understand various manufacturing processes such as joining, casting, rolling, forging, metal sheet forming, extrusion, powder metallurgy, material removal process, plastics and composite processing, surface coating and metal protection. Besides that, they will explore the technology used, design consideration and the economics of particular processes.

References:

1. Kalpakjian, S. and Schmid, R. (2013) Manufacturing Engineering and Technology, 7th Edition, Prentice Hall.
2. Groover, M.P., (2012) Fundamentals of Modern Manufacturing, 5th edition, John Wiley
3. Black J.T., Kohser, R.A, (2011) DeGarmo's Materials and Processes in Manufacturing, 11th edition, John Wiley

SMB31103 - Fluid Mechanics 2

Pre-Requisite: SMB21203 Fluid Mechanics 1

Synopsis:

This course introduces students to the mathematical description of fluid flows and the solution of some important flow problems. This course will cover flow measurements, compressible flow, external flows, and turbomachinery. Students will work to formulate the models necessary to study and analyze fluid systems through the application of these concepts, and to develop the problem-solving skills essential to good engineering practice of fluid mechanics in practical applications.

References:

1. Yunus A. Cengel and John M. Cimbala, (2013) Fluid Mechanics: Fundamentals and Applications, 3rd Ed., McGraw Hill International
2. Yunus A. Cengel, John M. Cimbala and Robert H. Turner (2016) Fundamentals of Thermal-Fluid Sciences. 5th edition, McGraw-Hill Higher Education.
3. C.T. Crowe, J.A. Roberson, and D. F. Elger, (2004) Engineering Fluid Mechanics, 8th Edition, John Wiley and Sons Inc.

SMB21203 - Fluid Mechanics 1

Pre-Requisite: SMB10103 Mathematics for Engineers 1

Synopsis:

This course will cover concept of fluid mechanics and properties, fluid statics, fluid kinematics, mass, Bernoulli, energy equations, momentum analysis of flow system, dimensional analysis, and internal flow.

References:

1. Yunus A. Cengel and John M. Cimbala, (2013) Fluid Mechanics: Fundamentals and Applications, 3rd Ed., McGraw Hill International.
2. C.T. Crowe, J.A. Roberson, and D. F. Elger. (2004). Engineering Fluid Mechanics, 8th Edition, John Wiley and Sons Inc.
3. Massey, B.S. (2011). Mechanics of Fluids, 9th Edition. CRC Press.
4. White, F.M. (1998). Fluid Mechanics, 4th Edition. McGraw Hill International.

SMB21404 - Engineering Mechanics 2

Pre-Requisite: SMB11103 Engineering Mechanics 1

Synopsis:

The topics that will be covered in this course 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.

References:

1. Hibbeler R. C. (2015). Engineering Mechanics: Dynamics. (14th ed.). Singapore: Prentice Hall
2. Myszka, D.H., (2011) Machines and Mechanism: Applied Kinematic Analysis, 4th eds., Prentice Hall
3. J. L. Meriam and L. G. Kraige, (2012) Engineering Mechanics: Dynamics, 7th edition, John Wiley & Son In

SMB31403 - Thermodynamics 2

Pre-Requisite: SMB21303 Thermodynamics 1

Synopsis:

This course covers gas power cycle, vapour cycle, refrigeration and heat pump, gas mixture properties, psychometric process, and chemical reaction.

References:

1. Cengel, Yunus A., Boles, Michael A. (2011), Thermodynamic: An Engineering Approach, 7th Ed, McGraw-Hill, New York, U.S.A.
2. Srivastava, R.C. (2007), Thermodynamics a core course, Prentice-Hall.
3. Turns, Stephen R. (2006), Thermodynamics Concepts and applications, New York, U.S.A.: Cambridge University Press

SMB 30102 - Industrial Safety and Health

Pre-Requisite: Nil

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

References:

1. Goetsch, D.L., (2010), Occupational Safety and Health for Technologies, Engineers and Managers, 7th Edition, Prentice Hall
2. Friend, Mark A., Kohn, James P. (2010), Fundamentals of Occupational Safety and Health (Fundamentals of Occupational Safety & Health), 5th edition, Government Institutes.
3. Roger L. Brauer (2005). Safety and Health for Engineers, 2nd edition Wiley-Interscience;
4. Occupational Safety and Health Act 1994 (Act 514) (2003), International Law Book Service.

SMB31203 - Heat and Mass Transfer

Pre-Requisite: SMB21303 Thermodynamics 1, SMB21203 Fluid Mechanics 1

Synopsis:

This course will cover fundamentals of heat transfer, heat conduction, heat convection, heat radiation, and heat exchanger.

References:

1. Cengel, Yunus A., Ghajar, Afshin J., "Heat and Mass Transfer: Fundamentals and Applications", Fifth Edition, McGraw-Hill, 2014
2. Yunus A. Cengel, John M. Cimbala and Robert H. Turner (2016) Fundamentals of Thermal-Fluid Sciences. 5th edition, McGraw-Hill Higher Education
3. Kreith, Frank., Manglik, Raj M. and Bohn, Mark S., "Principles of Heat Transfer", Seventh Edition, Cengage Learning, 2011.
4. Incropera, DeWitt, Bergman and Lavine, (2007) Fundamentals of Heat and Mass Transfer, 6th Ed., Wiley.

SMB32203 - Design 2

Pre-Requisite: SMB22203 Design 1/, SMB21104 Solid Mechanics

Synopsis:

This course will cover mechanical design, machine component, gear, bearing, factor of safety, stress, strength, fatigue under different types of loading and the methods on designing for strength and the selection criteria

References:

1. Robert C. Juvinall, Kurt M. Marshek., (2017). Fundamentals of Machine Component Design, 6th Edition, John Wiley and Son.
2. Spotts M.F., et al, Design of Machine Elements, 8th Edition, Mott R.L., (2013) Machine Elements in Mechanical Design, 5th Edition, Prentice-Hall

SMB31303 - Noise and Vibrations

Pre-Requisite: SMB21404 Engineering Mechanics 2

Synopsis:

This course aims to provide students with an understanding of the nature and behaviour of mechanical vibration and noise in dynamic engineering systems. This course will cover the basic principles of noise and vibrations, free vibration in one and two degree of freedom system and the means on assessing its risk and controlling them. Measurement of vibration and noise will be covered in the practical session laboratory.

References:

1. Singiresu S. Rao (2017). Mechanical Vibrations 6th edition. Pearson Education
2. Daniel J. Inman. (2014) Engineering Vibration. 4th Edition. Pearson Education
3. Malcolm J. Crocker (2007). Handbook of noise and vibration control. New Jersey, USA: John Wiley and Sons
4. V. Ramamurti. (2008) Mechanical Vibration Practice and Noise Control. Alpha Science.

SMB32103 - Computer Aided Engineering Analysis

Pre-Requisite: SMB32203 Design 2/ SMB21404 Engineering Mechanics 2/ SMB31203 Heat and Mass Transfer

Synopsis:

This course will cover mechanical part designing, mesh creating, convergence study, result stability, result evaluation and interpreting, and Von Mises stress analysis. This will help to further students' knowledge in the use of computer aided engineering software for solids modelling, computational fluid dynamics and selected topics in FEA.

References:

1. Chandrupatla, T.R. & Belegundu, A.D. (2014). Introduction to Finite Elements in Engineering: International Edition, 4th ed. Pearson Education Limited.
2. Logan, D, L. (2016). A First Course in the Finite Element Method. 6th ed. USA: Cengage Learning
3. Rao. S. S. (2017). The Finite Element Method in Engineering. 6th edition. Elsevier
4. Magrab, E.B. (2010). An Engineer's Guide to MATLAB,3rd Prentice Hall.

SMB34203 - Control Systems

Pre-Requisite: SMB21404 Engineering Mechanics 2

Synopsis:

This course will discuss the importance of control in time and frequency domain. It covers basic concepts of a control for open loop and closed systems. Description on system representation for electrical and mechanical systems are given in transfer function forms. Transient and steady state response of first and second order systems are presented. The stability of a system using Routh Hurwitz criterion is interpreted. Time response analysis using root locus is discussed. Frequency response analysis for Bode and Nyquist plots will represent the gain and phase margins. Finally, the course will cover controller design via root locus and frequency response.

References:

1. Norman S. Nise (2015). Control Systems Engineering, 7th Edition. Hoboken New Jersey: John Wiley
2. Katsuhiko Ogata (2009) Modern Control Engineering, 5th Edition. New Jersey, USA: Prentice Hall.
3. Clarence W. de Silva (2010) Modelling and Control of Engineering Systems, CRC Press

SMB46303 - Quality Engineering

Pre-Requisite: Nil

Synopsis:

This course will provide knowledge of quality management, up-to-date descriptions of engineering methods to measure, analyze, and design industrial work. The importance of quality and work design as part of methods engineering emphasizes not only increased productivity, but also to improve company bottom-line costs. This course also covers the Operational Production Management elements such as Queuing Model and Production System to enhance students' knowledge in analytical skill on continuous improvement of production.

References:

1. K.S.Krishnamoorthi (2011) *A First Course in Quality Engrg*, CRC.
2. Ramasamy,S.(2010).*Total Quality Management*.Tata McGraw-Hill

SMB34103 - Measurement and Instrumentation Systems

Pre-Requisite: SMB10102 Electrical Engineering/ SMB20102 Electronics Engineering

Synopsis:

This course presents the general principles of instrumentation processes. It explains the theoretical analysis of physical phenomena used by standard sensors/ transducers to transform a physical value into an electrical signal. It also provides information on pre-processing of signals through electronic circuits - amplification, signal filtering and analog-to-digital conversion. Topics covered include qualities of measurement, transducers, signal conditioning and data acquisitions.

References:

1. Alan S Morris Reza Langari (2015), Measurement and Instrumentation: Theory and Application, 2nd Edition, Academic Press Publications.
2. Dominique Placko (2010), Fundamentals of Instrumentation and Measurement, ISTE Ltd

SMB30103 - Numerical Methods for Engineers

Pre-Requisite: SMB10103 Mathematics for Engineers 1

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.

References:

1. Gilat, A., and Subramaniam, V., (2014), Numerical Methods for Engineers and Scientists; An Introduction with Application Using Matlab, 3rd Ed. John Wiley & Sons.
2. Chapra, S.C., and Canale, R.P., (2014), Numerical Methods for Engineers, 7th Edition, McGraw-Hill Education.
3. Chapra, S.C., (2017), Applied Numerical Methods with MATLAB for Engineers and Scientist, 4th Edition, McGraw-Hill Education.

SMB30203 - Statistics for Engineers

Pre-Requisite: Nil

Synopsis:

This course covers the introduction to probability, probability distribution and sampling distribution, test of hypothesis, analysis of variance, linear regression and correlation and factorial design.

References:

1. Navidi, William. Statistics for Engineers and Scientists, 4th Edition. Mc-Graw Hill. 2015
2. Montgomery, Douglas C and Runger, George C. Applied Statistics and Probability for Engineers, 6th Edition. John Wiley & Sons. 2013.
3. Montgomery, Douglas C. Design and Analysis of Experiments, 8th Edition. John Wiley & Sons. 2012
4. Hayter, Anthony. Probability and Statistics for Engineers and Scientists, 4th Edition. Brooks/Cole, Cengage Learning. 2013

SMB40102 - Engineers in Society

Pre-Requisite: SMB10202 Engineering Practice & Professionalism

Synopsis:

In this course, the student will learn the ethics and professionalism in engineering. It covers the responsible of engineers and corporations, moral reasoning and codes of ethics. It also emphasis on the roles of engineers to safeguard the public as well as contribution toward building sustainable society and its environment.

References:

1. C.B. Fleddermann. (2014). Engineering Ethics. 4th Edition. Prentice Hall.
2. C.E. Harris, M.S. Pritchard, M.J. Rabins. (2018). Engineering Ethics: Concepts and Case, 6th Edition,
3. Wadsworth, Cengage Learning. National Institute for Engineering Ethics (2010). Engineering Ethics – Concepts, Viewpoints, Cases and Codes. 3rd Edition.
4. National Academy of Engineering (2010). The Engineer of 2020: Vision of Engineering in the New Century. 2nd Edition.

SMB 30303 - Internet of Thing (IoT) Technology
Pre-Requisite: Nil
Synopsis:
This course will cover Industry 4.0 framework and architecture. Key elements in Industry 4.0 such as system integration, simulation, big data, Internet of Things, additive manufacturing and autonomous robotic are covered briefly in 5 major topics. Besides that, the architecture of Industry 4.0 implementation which consists of 5 levels; configuration level, cognition level, Cyber level, Conversion level, connection level is included in this course.
References:
1. Schwab, K. (2017). The fourth industrial revolution. Great Britain: Portfolio Penguin.
2. Waher, P. (2015). Learning Internet of Things: Explore and learn about Internet of Things with the help of engaging and enlightening tutorials designed for Raspberry Pi. Birmingham: Packet Publishing.
3. Casagrande, L., Gruber, V., & Marcelino, R. (2016). IoT and the industry 4.0: principles and educational applications. Saarbrucken: Scholars Press.
4. Agnihotri, R., & New, S. (2017). Industry 4.0 data analytics. Middletown: Rajesh Agnihotri, Samuel New.

SMB43103 - Design 3
Pre-Requisite: SMB32203 Design 2
Synopsis:
This course exposes on system definition, specification, system design, system development and implementation. This course focuses on the design of systems that produce a product. Understanding the system used to produce this design, and to produce the system, is an integral part of the course. The components of Systems Design include functional analysis, requirements analysis, translation of functions and requirements into a system and product architecture and testing to verify the product meets the requirements. Decision methodology, alternative analysis, trade studies, integration of human factors, producible, reliability, maintainability, feasibility, and safety are addressed as part of the product design system.
References:
1. Charles S. Wasson (2016) System Engineering Analysis, Design, and Development: Concepts, Principles, and Practices, John Wiley and Sons Ltd.
2. Dennis M. Buede, William D. Miller (2016), The Engineering Design of Systems: Models and Methods, John Wiley & Sons Inc.
3. Kossiakoff, A., et al. (2011). Systems Engineering - Principles and Practice, 2nd Ed. John Wiley & Sons

SMB40103 - Project and Industrial Management
Pre-Requisite: Nil
Synopsis:
This course will include major topics of Strategy, Priorities, Organization, Project Tools, and Leadership. Primary class emphasis is on the project management process and tools.
References:
1. Gray, C. F. and Larson, E. W. (2013). Project management – The Managerial Process, 6th ed. Mc Graw-Hill Higher Education.
2. Benjamin NIEBEL and Andris FREIVALDS. (2010). Methods, Standards, and Work Design. McGraw Hill, 12'Th edition.
3. Russell, R. S. and Taylor, B. W. (2011). Operation Management, 2nd Ed. Wiley.

SSB 10103 - Engineering Mathematics 1
Pre-Requisite: Nil
Synopsis:
This subject will cover the basic and advance concept of differentiation, integration, matrices and complex number and expose the students with the related problem with the engineering.
References:
1. Maurice D. Weir, Joel Hass, George B. Thomas, Jr., Thomas' Calculus - 13 edition, Pearson (2013).
2. James Stewart, Calculus – 7th edition, Brooks/Cole (2012).
3. Erwin Kreyszig, Advance Engineering Mathematics – 10th edition, John Wiley & Sons Inc (2011).
4. C. Henry Edwards, David E. Penney, Differential Equations and Linear Algebra – 3rd Edition, Pearson (2010).
5. Howard Anton, Irl C. Bivens Stephen Davis, Calculus Early Transcendental- Combined 9th edition, John Wiley & Sons Inc (2010).
6. Murray, R. Spiegel, Seymour Lipschutz, Dennis Spellman, Vector Analysis – 2nd Edition, Mc Graw Hill (2009).

SSB 10203 - Engineering Mathematics 2
Pre-Requisite: SSB 10103 Engineering Mathematics 1
Synopsis:
This subject will cover the basic concept of differential equation, expose the student with the different methods of solving differential equation and apply the concept of differential equation to solve the problem related to engineering in real life. It also emphasizes on integral transform to solve boundary value problem and use numerical method and matrices to solve differential equation.
References:
1. James R. Brannan, William E. Boyce, (2015), Differential Equations with boundary Value Problems Modern Methods and Applications, 3rd Edition, John Wiley & Sons, Inc.
2. Peter V. O'Neil (2012), Advance Engineering Mathematics – 7th Edition.
3. C.Henry Edwards & David E. Penny (2010), Differential Equations & Linear Algebra – 3rd Edition, Pearson.
4. Erwin Kreyszig (2011), Advance Engineering Mathematics – 10th edition, John Wiley & Sons Inc.

SSB 10303 - Design of Experiments
Pre-Requisite: Nil
Synopsis:
This subject will cover the introduction to design of experiments, simple comparative experiments, experimental design for single factor and introduction to factorial designs. Students also will be exposed to the software usage in analyzing data through various statistical methods.
References:
1. Navidi, William. *Statistics for Engineers and Scientists, 4th Ed*. Mc-Graw Hill. 2015
2. Montgomery, Douglas C and Runger, George C. *Applied Statistics and Probability for Engineers, 6th Edition*. John Wiley & Sons. 2013.
3. Montgomery, Douglas C. *Design and Analysis of Experiments, 8th Ed*. John Wiley & Sons. 2012
4. Hayter, Anthony. *Probability and Statistics for Engineers and Scientists, 4th Ed*. Brooks/Cole, Cengage Learning. 2013

SSB 24203 - Applied Statistics
Pre-Requisite: Nil
Synopsis:
This course will cover the basic and advance concept of applied statistics including descriptive statistics, probability, hypotheses testing and regression methods.
References:
1. William Navidi (2014), Statistics for Engineers and Scientist 4th edition, McGraw-Hill.
2. Douglas C. Montgomery (2013), Applied Statistics and Probability for Engineers – 6th edition, John Wiley & Sons Inc.

COURSE OFFERED BY STUDENT DEVELOPMENT SECTION (DIPLOMA)

WED10402 - Competency English

Pre-Requisite: Nil

Synopsis:

This course focuses on both receptive (listening & reading) and productive (speaking & writing) skills as well as grammar. Assessments will be task-based where stimulating exercises and group activities will be employed to motivate students to use the language confidently in various situations.

References:

1. Choo, W., Nyanaprakasan, S., Yee, S., & Yeoh, W. (2014). *Ace ahead MUET (5th ed)*. Shah Alam, Selangor: Oxford Fajar.
2. Kaur, H. & Jonas, F. (2013). *Effective practice MUET*. Shah Alam, Selangor: Oxford Fajar.
3. Kaur, N., Subramaniam, H. & Subramaniam, A. (2013). *Score in MUET*. Shah Alam, Selangor: Oxford Fajar.
4. Koh, S. (2011). *Effective text MUET*. Subang Jaya, Selangor: Penerbit Ilmu Bakti.

WED20202 - Communication English 1

Pre-Requisite: WED10402 – Competency English

Synopsis:

In this course, students' acquisition of English is enhanced through language enrichment activities that equip students with the skills to organize a language activity/event, and this involves preparing a proposal and conducting meetings. Students will also practice communicating orally with their English Day project and deliver a presentation on their project using effective visual aids.

References:

1. Gamble, T. K. and Gamble, M. (2012). *Communication Works.* 11th ed. McGraw-Hill.
2. Abdul Rahim Salam & Zairus Norsiah Azahar. (2008*). English communication for learners in engineering, 2nd ed*. Kuala Lumpur, Malaysia: Prentice Hall.
3. Guffey, M. E. & Loewy, D. (2013). *Essentials of business communication*. Mason, Ohio: South-Western Cengage Learning.

MPU2232 - Interpersonal Skills

Pre-Requisite: Nil

Synopsis:

This course is aimed directly at fostering one aspect of communication skills namely interpersonal skills; leadership; teamwork; problem-solving and decision-making skills. Students' abilities to communicate meaning via speaking and writing are addressed through assignments and interactive activities.

References:

1. Wood, J.T. (2016) *Interpersonal Communication: Everyday Encounters*. 8th Ed. Chapel Hill: University of North Carolina.
2. Robbins, S. P. & Hunsaker, P. L. (2012). *Training in interpersonal skills: tips for managing people at work.* Boston: Prentice Hall.
3. Pace, J. (2006). *The workplace: Interpersonal strengths and leadership.* Boston: McGraw Hill.

WED20302 - Communication English 2

Pre-Requisite: WED 20202 Communication English 1

Synopsis:

Students are exposed to writing reports particularly research report. They are also exposed to the language structure and writing skills used in report writing. In the second part of the course, students are guided to undertake a research project. In the last part of the course students are exposed to ways in writing cover letter and resume as well as in handling interview questions.

References:

1. Rentz, K. & Lentz, P. (2014). ***L****esikar's business communication: Connecting in a digital world***.** McGraw-Hill Companies:
2. Howard, R. M. (2014). *Writing matters: A handbook for writing and research*. New York: McGraw-Hill.
3. Nor Ainun Zakaria, Aishah Muslim, Mazlin Mohamad Mokhtar, Prapagaran B. K. (2013). *Polytechnic series*: *Communicative English 3*. Shah Alam, Selangor: Oxford Fajar

MPU2313 - Amalan Islam di Malaysia

Pre-Requisite: Nil

Synopsis:

Kursus ini membincangkan aspek-aspek amalan Islam yang diaplikasikan di Malaysia. Perbincangan ini meliputi konsep manusia dan agama, asas-asas Islam dan sejarah kedatangan agama Islam di Malaysia serta menerangkan keistimewaan Islam melalui institusi pendidikan, kekeluargaan, ekonomi dan pentadbiran di Malaysia. Di samping itu, perbincangan juga dilengkapkan dengan isu-isu semasa dalam masyarakat berlandaskan ajaran Islam.

References:

1. Azis Jakfar Soraji. (2012). ***Pengajian Islam.*** Shah Alam, Oxford Fajar.
2. Nasrudin Yunos et.al (2007). ***Pengajian Islam.*** Shah Alam, Oxford Fajar.
3. Paizah Ismail, (2008) Hudud: Hukum dan Pelaksanaan. Shah Alam: Karya Bestari.

MPU2323 - Religious Practices in Malaysia
Pre-Requisite: Nil
Synopsis:
This course will discuss humans and religions in Malaysia. Besides that, this course will also discuss Islam as the religion of federation and other major religions in Malaysia such as Christianity, Buddhism, Hinduism, Sikhism and Taoism. Finally, this course will touch on current issues related to religious practices in Malaysia.
References:
1. Saw Swee-Hock (2015). The Population of Malaysia 2nd Ed. ISEAS Publishing, Singapore.
2. Mohd. Azizuddin Mohd Sani (2014), Politics of Religious Expression in Malaysia. ISEAS Publishing, Singapore.
3. Gerhard Hoffstaedter (2011), Modern Muslim Identities: Negotiating Religion and Ethnicity in Malaysia. NIAS Press.

MPU 2163 - Pengajian Malaysia 2
Pre-Requisite: Nil
Synopsis:
Mata pelajaran Pengajian Malaysia peringkat diploma ini dibahagikan kepada 6 (ENAM) topik utama iaitu Sejarah dan Politik, Perlembagaan Malaysia, Kemasyarakatan dan Perpaduan, Pembangunan Negara, Isu-isu Keprihatinan Negara dan Pemikiran dan Kepercayaan.
References:
1. Mardiana Nordin & Hasnah Hussiin. 2014. Pengajian Malaysia (Edisi Kelima), Shah Alam : Oxford Fajar .
2. Abdul Halim Ramli, 2015, Perlembagaan Malaysia: Isu dan Persoalan Perhubungan Kaum, Dewan Bahasa dan Pustaka: Kuala Lumpur.
3. Abdul Manaf Ahmad, 2011, Sejarah Perlembagaan Malaysia, Penerbit Karangkraf.
4. Azmah Abdul Manaf, 2009, Kemunculan Malaysia Moden, Utusan Publications & Distributors: Kuala Lumpur.
5. Kamaruzzaman Ismail, 2012, Pengajian Malaysia, First Edition, Shah Alam: Oxford Fajar
6. Ma'rof Redzuan, Asnarulkhadi Abu Samah, Nazaruddin Hj. Mohd Jali, Ismail Hj. Mohd Rashid, 2008, Pengajian Malaysia: Kenegaraan dan Kewarganegaraan (Edisi Kedua), Prentice-Hall: Petaling Jaya.
7. Mardiana Nordin & Hasnah Hussiin, 2014, Malaysian Studies Second Edition, Shah Alam: Oxford Fajar.
8. Mohd Sohaimi Esa, Doyu Sanfilu, Budi Antu Mohd Taming, 2011, Hubungan Etnik: Kelangsungan Pembinaan Negara, Penerbitan Multimedia.
9. Ruslan Zainuddin, Ho Hui Ling, 2010, Hubungan Etnik di Malaysia: Edisi Kedua, Penerbit Oxford Fajar : Shah Alam.
10. Wan Hashim Wan Teh, 2011, Hubungan Etnik di Malaysia, ITBM: Institusi Terjemahan & Buku Malaysia.
11. Wan Ramli Wan Muhamad, 2010, Malaysian Customs and Traditions. Kuala Lumpur: National Department for Culture and Arts, Ministry of Information, Communication and Culture.

MPU 2133 - Bahasa Melayu Komunikasi 1
Pre-Requisite: Nil
Synopsis:
Mata pelajaran ini diperkenalkan supaya dapat membantu pelajar-pelajar luar negara menggunakan bahasa Melayu dalam aktiviti kehidupan mereka. Oleh itu sukatan pelajarannya menekankan aspek bahasa komunikasi dan kaedah penggunaan bahasa yang mudah seperti sebutan dan intonasi, sistem ejaan, berkomunikasi secara lisan dan tulisan serta memahami pernyataan umum.

This subject is introduced to assist foreign students in using Bahasa Melayu in their social life. This syllabus stresses on language for communication and the use of simple language method like using pronunciation and intonation, spelling system, speaking and writing as well as understanding public statements.
References:
1. Kamarul Afendey Hamimi. 2015. Bahasa Melayu Komunikasi Oxford Fajar Sdn.Bhd
2. Zarina Othman, Roosfa Hashim & Rusdi Abdullah.2012. Modul Komunikasi Bahasa Melayu Antarabangsa, KPT: Penerbit UKM Press.
3. Yong Chyn Chye, Rohaidah Mashudi, Maarof Abd Rahman, 2012. Bahasa kebangsaan untuk pelajar luar negara: Malay language for international students. Petaling Jaya: Pearson Malaysia
4. Adenan Ayob. 2009. Bahasa Kebangsaan. Shah Alam: Oxford Fajar.
5. Siti Hajar Abdul Aziz. 2008. Siri Pendidikan Guru Bahasa Melayu I. Shah Alam: Oxford Fajar Sdn. Bhd.

WMD10101 - Mandarin 1
Pre-Requisite: Nil
Synopsis:
This course introduces the basic grammatical structures of Chinese sentences to acquire the basic oral and written communication skills. The contents of this course are Chinese writing system (including Pinyin), numbers, useful Chinese expressions to greet others, to introduce oneself and family members, date, time, food and beverages.
References:
1. Lai Siew Yoon, Tan Hua An, Tay Yang Lian. (2013). Speak Chinese, An Introductory Course to the Chinese Language. Petaling Jaya: Cengage Learning
2. Lai Siew Yoon, Lim Yoke Len. (2010). *Shenghuo Huayu, An Introductory Course to the Chinese Language*. Singapore: Cengage Learning Asia Pte Ltd.
3. Yamin Ma, Xinying Li. (2007). *Easy Steps to Chinese*. Beijing: Beijing Language & Culture University Press. Available from: http://www.yes-chinese.com/zh-cn/course/view.html?id=3681
4. Zhongwei Wu. (2010). Contemporary Chinese. Beijing: Sinolingua Available from: http://www.yes-chinese.com/en/course/view.html?id=3691

WMD 10201 - Mandarin 2

Pre-Requisite: WMD 10101 – Mandarin 1

Synopsis:

This course introduces the basic grammatical structures of Chinese sentences in order to acquire the basic oral and written communication skills. The contents of this course are useful expressions in Mandarin to describe household objects, university facilities and activities, shopping and purchases, directions, locations, going to places and holiday activities.

References:

1. Lai Siew Yoon, Tan Hua An, Tay Yang Lian (2013). Speak Chinese, An Introductory Course to the Chinese Language. Petaling Jaya: Cengage Learning
2. Lai Siew Yoon, Lim Yoke Len. (2010). *Shenghuo Huayu, An Introductory Course to the Chinese Language*. Singapore: Cengage Learning Asia Pte Ltd.
3. Yamin Ma, Xinying Li. (2007). *Easy Steps to Chinese*. Beijing:Beijing Language & Culture University Press. Available from: http://www.yes-chinese.com/zh-cn/course/view.html?id=3681
4. Zhongwei Wu. (2010). Contemporary Chinese. Beijing: Sinolingua. Available from: http://www.yes-chinese.com/en/course/view.html?id=3691

WSD10102 - Spanish 1

Pre-Requisite: Nil

Synopsis:

This course introduces students to the Spanish language at a beginner's level. Students are taught to use very basic grammatical structures, everyday expressions and phrases to meet their immediate needs regarding self and family information.

References:

1. Spanish manual for WSD 10101 (for internal circulation only, 2015)
2. Equipo Prisma. (2007). *Prisma Comienza: Método de español para extranjeros.* Madrid: Editorial Edinumen.
3. Equipo Club Prisma. (2007). *Club Prisma: Método de español para jóvenes nivel inicial.* Madrid: Editorial Edinumen.
4. Martín, M. T., Pérez, L., & Ramos, J. (2007). *Español lengua viva 1.* Madrid: Santillana Educación.

WSD 10102 - Spanish 2

Pre-Requisite: WSD10102 – Spanish 1

Synopsis:

This course introduces students to the Spanish language at a beginner's level. Students are taught to use basic grammatical structures, everyday expressions and phrases to meet their immediate needs regarding food ordering and weekend activities.

References:

1. Spanish manual for WSD 10201 (for internal circulation only, 2015)
2. Equipo Prisma. (2007). *Prisma Comienza: Método de español para extranjeros.* Madrid: Editorial Edinumen.
3. Equipo Club Prisma. (2007). *Club Prisma: Método de español para jóvenes nivel inicial.* Madrid: Editorial Edinumen.
4. Martín, M. T., Pérez, L., & Ramos, J. (2007). *Español lengua viva 1.* Madrid: Santillana Educación.

WBD10102/MPU2222 - Introduction to Entrepreneurship

Pre-Requisite: Nil

Synopsis:

The module will enhance student's knowledge and skills in business planning, financial management, business operations and marketing. The focus will be on attributes of Technopreneurs, searching for viable opportunities, taking into considerations the trends and new challenges in the business world; and gathering the resources necessary to convert a viable opportunity into a successful business.

References:

1. Azahari Jamaludin, Abd Razak Mohd Yusoff, Mohd Hazli Mohd Rusli, Salwah Che Mat & Zawiah Abdul Majid (2011). Introduction to entrepreneurship. Oxford Fajar
2. Donald F. Kuratko (2009). *Entrepreneurship: Theory, process, practice 8th Ed.* Southwestern Cengage Learning
3. Azahari Jamaludin, Abd Razak Mohd Yusoff, Mohd Hazli Mohd Rusli, Hamidon Katan, Jimisiah Jaafar, Mohd Fauzi Zainol Abidin, Mohd Radzi Zainuddin, Rosnizza Ramlan, Salwah Che Mat & Zawiah Abdul Majid (2012). *Technopreneurship*. Kuala Lumpur: Oxford Fajar

MPU 2213 - Bahasa Kebangsaan A

Pre-Requisite: Non-Credit SPM

Synopsis:

Mata pelajaran ini bertujuan meningkatkan kecekapan dan kemahiran pelajar menggunakan bahasa Melayu sebagai wahana komunikasi dan penyampai ilmu yang padat, sofistikated, jitu dan canggih. Selain itu, mata pelajaran ini diharapkan mampu memupuk kemahiran menjalin idea secara bertulis dan juga lisan. Di samping itu, matapelajaran ini juga membimbing para pelajar mengenalpasti pelbagai laras bahasa, baik sebagai gaya bahasa tulisan mahupun lisan dengan perhatian khusus kepada Bahasa untuk akademik.

References:

1. Siti Hajar Abdul Aziz. (2011) *Bahasa Melayu 1*. Kuala Lumpur: Oxford
2. Fajar Adenan Ayob (2009). Bahasa Kebangsaan. Shah Alam. Oxford Fajar.
3. Nik Safiah Karim et. Al. (2006) *Tatabahasa Dewan*. Kuala Lumpur: Dewan Bahasa dan Pustaka,
4. Dewan Bahasa dan Pustaka (2007). Kamus Dewan. Edisi Keempat. Kuala Lumpur: Dewan Bahasa dan Pustaka, Kementerian Pendidikan Malaysia

MPU2442 - Rakan Masjid 1
Pre-Requisite: Nil
Synopsis:
This course familiarises students with significant events in Islam and gives them the opportunity to organise activities in relation to these events. This course also explores Islamic institutions in Malaysia which serve different functions, including provision of Islamic counselling services.
References:
1. Mohd Ismail Mustari & Kamarul Hasmi Mustari (2008). *Fungsi dan peranan masjid dalam masyarakat.* UTM
2. Mohd Ismail Mustari & Kamarul Hasmi Mustari (2008). *Pengurusan berkualit memacu kecemerlangan pengurusan masjid*. UTM
3. Mohd Ismail Mustari & Kamarul Hasmi Mustari (2008). *Pengimarahan Masjid dalam agenda ummah*. UTM

MPU 2452 - Siswa Siswi Bomba dan Penyelamat 2
Pre-Requisite: Nil
Synopsis:
This course aims to enable students to understand the roles and functions on the Malaysian Fire & Rescue Department and apply the knowledge of emergency aid as well as the foot marching technique. Apart from that, students will be exposed to the planning and implementation of rescue, first aid and fire rescue activities.
References:
1. Akademik Bomba & Penyelamat Malaysia. 2012. *Mencari dan Menyelamat*. Jabatan Bomba dan Penyelamat Malaysia: Kuala Lumpur.
2. Akademi Bomba dan Penyelamat Malaysia. 2012. *Pengenalan Tali, Simpulan dan Ikatan*. Jabatan Bomba dan Penyelamat Malaysia: Kuala Lumpur.
3. Akademik Bomba & Penyelamat Malaysia. 2012. *Kawad Operasi Kebombaan*. Jabatan Bomba dan Penyelamat Malaysia: Kuala Lumpur.

MPU 2462- Siswa Siswi Pertahanan Awam 2
Pre-Requisite: Nil
Synopsis:
This course aims to enable students to understand the roles and functions of the Malaysian Civil Defence Department and apply the knowledge of emergency aid as well as the foot marching technique. Apart from that, students will be exposed to the planning and implementation of rescue, first aid and fire rescue activities.
References:
Malaysian Civil Defence Force (2010). Buku panduan pengurusan kor SISPA. Shah Alam: Pusat Penerbitan Universiti (UPENA), UiTM.

MPU 2472 - Sport Management 2
Pre-Requisite: Nil
Synopsis:
This course aims to enable students to enhance their understanding and skill in respective sports in term of games technique, rules, ruling and other aspects which are pertinent to the process of organizing sports competition. This course also aims to instill discipline among the students.
References:
1. Rusell Hoye, Matthew Nicholson, Aaron Smith, Bob Stewart & Hana Westerbeek (2012*). Sport Management and Application 3rd edition*. Routledge Taylor & Francis.
2. Milena Parent & Sharon Smith-Swan (2012). *Managing Major Sport Events Theory & Practise*. Routledge Taylor & Francis Group.

COURSE OFFERED BY STUDENT DEVELOPMENT SECTION (BACHELOR)

WEB10302 - Fundamental English
Pre-Requisite: Nil
Synopsis:
This course aims to improve students' ability as language learners by equipping students with pertinent vocabulary skills (suffixes, prefixes, contextual clues and dictionary skills). Apart from that, students are also exposed to basic sentence structures (simple, compound and complex) and basic sentence errors (fragments, dangling modifiers, etc.). As a final assessment, they are required to prepare an article review based on the text they have chosen. During this final assessment, they are required to utilise vocabulary and writing skills taught at the initial stage. They are then tasked to present their opinions and suggestions concerning their article review using appropriate and effective presentation techniques.
References:
Pakirisamy, S., Azura Omar, Fatin Zawani Zainal Azaim, Kim, D. S., Lau, C. K., Sarah Nadiah Rashidi, Mohd Hafizh Mohamed. (2015). *Fundamental English*. Petaling Jaya, Selangor: Cengage Learning Asia Pte. Ltd.

WEB20202 - Professional English 1
Pre-Requisite: Nil
Synopsis:
This module covers the important aspects of workplace communication. Students are first introduced to business correspondence which covers several important workplace communication tasks like writing business letters, proposals, documents in a meeting. This module trains students to apply effective meeting skills and exposes them to event organisation.
References:
1. Aina Suriana binti Mahmood @ Md. Zawawi, Azrul Hisyam bin Abdul Rahman, Fazrul Azmi bin Zulkifli, Ida Suriana binti Basri, Noorhayati binti Saharuddin, Nor Hafizah binti Ismail, Suguna K Dazz. (2015). *Business communication*. Petaling Jaya, Selangor: Cengage Learning Asia Pte Ltd.
2. Abdullah, N. A., Noor, N. Mhd., Teh, C.S. & Foo, K. (2008). *Communication skills for the workplace*. Malaysia: August Publishing.
3. Sanchez, H. et al. (2006). *English for professional success*. Thomson.

WEB20302 - Professional English 2
Pre-Requisite: WEB10302-Fundamental English, WEB20202-Professional English 1
Synopsis:
This module focuses on equipping students with appropriate technical communication skills and skills in writing a technical report. Students will embark on a technical writing project where they are exposed to the proper method in writing a technical report. Students are required to contact personnel from the industry. Once the person is identified, students are then to correspond with him/her formally, which involves them setting a meeting to interview the person they have chosen.
References:
1. Pfeifer W.A & Adkins K.E. (2013). *Technical communication: A practical approach* (8th ed). Singapore: Pearson.
2. Gaudart, H., Hughes, R. & Micheal, J. (2007). *Towards better English grammar (*2nd ed*)*. Shah Alam, Selangor: Oxford Fajar.
3. Norazman Abdul Majid, Masdinah Alauyah Md. Yusoff, Tina Abdullah, Sahirah Marzuki, Zanariah Md. Salleh, Faruk Muhammad, Rohayah Kahar. (2007). *Academic report writing: From research to presentation* (2nd ed). Singapore: Prentice Hall.
4. Krishnan, L. A., Jong, R., Kathpalia, S. S., & Tan, M. H. (2006). *Engineering your report: From start to finish (*2nd ed*).* Singapore: Prentice Hall.

MPU3333 - Isu-isu Kontemporari Muslim di Malaysia
Pre-Requisite: Nil
Synopsis:
Kursus ini memberikan pengetahuan berkaitan isu-isu kontemporari yang melingkari masyarakat Islam di Malaysia. Sejarah dan perkembangan Islam, ideologi dan fahaman yang mempengaruhi umat Islam, salah faham terhadap Islam, kepenggunaan, institusi keluarga dan masyarakat, sains dan teknologi serta masa depan Islam diperjelaskan dengan sandaran dalil wahyu dan realiti semasa.
References:
1. Yusuf al-Qaradhawi, (2015) Fatwa Kontemporari Jilid 1 Siri 1-4, PTS Publishing House.
2. Ibrahim, Basri and Engku Ali, Engku Muhammad Tajuddin and Mohd, Zulkifli. (2015). *Fatwa-Fatwa Berkaitan Fiqh Semasa di Malaysia.* Al-Hidayah House of Publisher Sdn Bhd, K. Lumpur

MPU3173 - Pengajian Malaysia 3
Pre-Requisite: Nil
Synopsis:
This course is intended to be taken by International Students underdoing bachelor's degree intake programme. This course is divided into five (5) major topics: The History of Malaysian Independence, The System and Structure of Malaysian Administration, Malaysian Constitution and Current Issues.
References:
1. Mardiana Nordin & Hasnah Hussiin (2014). Malaysian Studies 2nd Edition. Shah Alam: Oxford Fajar.
2. Abdul Manaf Ahmad, 2011, Sejarah Perlembagaan Malaysia, Penerbit Karangkraf.

MPU3343 - Culture and Lifestyle in Malaysia
Pre-Requisite: Nil
Synopsis:
This module focuses on equipping students with appropriate understanding of Malaysian culture and lifestyle. It will be divided into five major topics: background of Malaysian society; local and national moral values; local and national social culture; traditional and local arts; as well as celebrations and festivals.
References:

1. Wan Hashim Wan The (2011). *Hubungan Etnik di Malaysia*. Kuala Lumpur: Attin Press Sdn. Bhd.
2. Mardiana Nor & Hasnah Hussin (2014). *Pengajian Malaysia*. Kuala Lumpur: Oxford Fajar Bakti Sdn. Bhd.
3. Wan Ramli Wan Muhamad (2010). *Malaysian Customs and Traditions*. Kuala Lumpur: National Department for Culture and Arts

MPU3123 - Tamadun Islam & Tamadun Asia (TITAS)
Pre-Requisite: Nil
Synopsis:
Kursus ini membincangkan tentang ilmu ketamadunan yang mencakupi pengenalan ilmu ketamadunan, interaksi antara pelbagai tamadun Melayu, Cina dan India, Islam dalam Tamadun Melayu, Isu-isu kontemporari Tamadun Islam dan Tamadun Asia, Islam Hadhari dan proses pembangunan negara. Objektif mata pelajaran ini ialah untuk memperkenalkan kepada pelajar tentang ilmu ketamadunan yang mencakupi pengenalan ilmu ketamadunan, interaksi antara pelbagai tamadun, Isu-isu kontemporari dan implikasinya kepada proses pembangunan Negara di samping melahirkan pelajar yang mempunyai sikap hormat menghormati, mengamalkan nilai-nilai murni dan mempunyai jati diri sebagai warganegara.
References:

1. Ahmad Zaki Abdul Latif, Azam Hamzah dan Azhar Mad Aros. 2012. *Tamadun*
2. *Islam dan Tamadun Asia*. Shah Alam: Oxford Fajar.
3. Mashitah Sulaiman & Adibah Sulaiman @ Mohamad, 2009, *Tamadun Islam dan Tamadun Asia.* Nilai: Penerbit USIM
4. Kementerian Pengajian Tinggi. 2009. *Modul Pengajian Tamadun Islam dan Tamadun Asia*. Kuala Lumpur: Penerbit Universiti Malaya.
5. Zulkifili Mohamad, Nasaruddin Yunos & Mohamad Sabri Haron, 2006. *Tamadun Islam dan Tamadun Asia*. Bangi: Pusat Pengajian Umum, Universiti Kebangsaan Malaysia.

MPU3113 - Hubungan Etnik
Pre-Requisite: Nil
Synopsis:
Kursus ini memfokuskan perbincangan tentang hubungan etnik di Malaysia yang mana ianya merupakan proses hubungan sosial yang dinamik. Tujuan kursus ini adalah untuk meningkatkan pemahaman pelajar-pelajar tentang konsep kesepaduan sosial, potret hubungan etnik, konsep-konsep asas hubungan etnik, pluraliti dan masyarakat pluralistik di Malaysia, pembangunan politik, pembangunan ekonomi, dan perlembagaan Malaysia dalam konteks hubungan etnik di Malaysia, integrasi dan menangani cabaran, agama dan masyarakat, sumbangan kerajaan dan masyarakat dan inter-etnik dan intra-etnik. Objektif mata pelajaran ini adalah untuk meningkatkan pemahaman pelajar-pelajar tentang konsep kesepaduan sosial, konsep-konsep asas hubungan etnik, pluraliti dan masyarakat pluralistik. Pelajar juga didedahkan dengan konsep pembangunan politik, ekonomi dan perlembagaan dalam konteks hubungan etnik di Malaysia.
References:

1. Zaid Ahmad *et.al*. 2013. *Hubungan Etnik di Malaysia Edisi Ketiga*. Shah Alam: Oxford Fajar
2. Shamsul Amri Baharuddin (ketua editor). 2013. *Modul Hubungan Etnik Edisi kedua*. Bangi: Institut Kajian Etnik UKM.
3. Abdul Halim Ramli,2015, *Perlembagaan Malaysia: Isu dan Persoalan Perhubungan Kaum,* Dewan Bahasa dan Pustaka : Kuala Lumpur.
4. Abdul Manaf Ahmad, 2011, *Sejarah Perlembagaan Malaysia*, Penerbit Karangkraf.
5. Mardiana Nordin & Hasnah Hussiin ,2014, *Pengajian Malaysia (Edisi Kelima)*, Shah Alam : Oxford Fajar.
6. Mohd Sohaimi Esa, Doyu Sanfilu, Budi Antu Mohd Taming,2011, *Hubungan Etnik : Kelangsungan Pembinaan Negara,* Penerbitan Multimedia.
7. Ruslan Zainuddin, Ho Hui Ling, 2010, *Hubungan Etnik di Malaysia: Edisi Kedua*, Penerbit Oxford Fajar: Shah Alam.
8. Wan Hashim Wan Teh, 2011, *Hubungan Etnik di Malaysia*, ITBM: Institusi Terjemahan & Buku Malaysia.
9. Wan Ramli Wan Muhammad, 2010, *Malaysian Customs and Traditions*, National Department for Culture and Arts: Kuala Lumpur.

SIB11501 - Mandarin for Business
Pre-Requisite: Nil
Synopsis:
This course is designed for students who need to learn Chinese business language. It introduces the basic grammatical structures of Chinese sentences in order to acquire the basic oral and written communication skills. It covers basic daily corporate interactions and business-related social exchanges. It is aimed to equip student with a basic language skill of Mandarin for daily social and business dealings. On top of that, it is targeted to develop students' intercultural competence.
References:

1. Guan Daoxiong (2018). A Practical Business Chinese Reader, (Third Edition). Beijing: Peking University Press.
2. Huang Weizhi (2008). Business Chinese Conversation – Elementary, Volume 1. Beijing: Beijing Language and Culture University Press.
3. Huang Weizhi (2008). Business Chinese Conversation – Elementary, Volume 2. Beijing: Beijing Language and Culture University Press.
4. Wang Xiaojun, Zhang Wangxi, Sun Dejin (2005). A Business Trip to China: Conversation & Application, Volume 1. Beijing: Beijing Language and Culture University Press.
5. Wang Xiaojun, Zhang Wangxi, Sun Dejin (2005). A Business Trip to China: Conversation & Application, Volume 2. Beijing: Beijing Language and Culture University Press.

MPU 3472 - Sport Management 2
Pre-Requisite: Nil
Synopsis:
This course aims to enable students to enhance their understanding and skill in respective sports in term of games technique, rules, ruling and other aspects which are pertinent to the process of organizing sports competition. This course also aims to instill discipline among the students
References:
1. Rusell Hoye, Matthew Nicholson, Aaron Smith, Bob Stewart & Hana Westerbeek (2012*). Sport Management and Application 3rd edition*. Routledge Taylor & Francis.
2. Milena Parent & Sharon Smith-Swan (2012). *Managing Major Sport Events Theory & Practise*. Routledge Taylor & Francis Group.

MPU3442 - Rakan Masjid 2
Pre-Requisite: Nil
Synopsis:
This course familiarises students with significant events in Islam and gives them the opportunity to organise activities in relation to these events. This course also explores Islamic institutions in Malaysia which serve different functions, including provision of Islamic counselling services.
References:
1. Mohd Ismail Mustari & Kamarul Hasmi Mustari (2008). *Fungsi dan peranan masjid dalam masyarakat.* UTM
2. Mohd Ismail Mustari & Kamarul Hasmi Mustari (2008). *Pengurusan berkualit memacu kecemerlangan pengurusan masjid*. UTM
3. Mohd Ismail Mustari & Kamarul Hasmi Mustari (2008). *Pengimarahan Masjid dalam agenda ummah*. UTM

MPU 3452 - Siswa Siswi Bomba dan Penyelamat 2
Pre-Requisite: Nil
Synopsis:
This course aims to enable students to understand the roles and functions on the Malaysian Fire & Rescue Department and apply the knowledge of emergency aid as well as the foot marching technique. Apart from that, students will be exposed to the planning and implementation of rescue, first aid and fire rescue activities.
References:
1. Akademik Bomba & Penyelamat Malaysia. 2012. *Mencari dan Menyelamat*. Jabatan Bomba dan Penyelamat Malaysia: Kuala Lumpur.
2. Akademi Bomba dan Penyelamat Malaysia. 2012. *Pengenalan Tali, Simpulan dan Ikatan*. Jabatan Bomba dan Penyelamat Malaysia: Kuala Lumpur.
3. Akademik Bomba & Penyelamat Malaysia. 2012. *Kawad Operasi Kebombaan*. Jabatan Bomba dan Penyelamat Malaysia: Kuala Lumpur.

MPU 3462 - Siswa Siswi Pertahanan Awam 2
Pre-Requisite: Nil
Synopsis:
This course aims to enable students to understand the roles and functions of the Malaysian Civil Defence Department and apply the knowledge of emergency aid as well as the foot marching technique. Apart from that, students will be exposed to the planning and implementation of rescue, first aid and fire rescue activities.
References:
Malaysian Civil Defence Force (2010). Buku panduan pengurusan kor SISPA. Shah Alam: Pusat Penerbitan Universiti (UPENA), UiTM.

COURSE OFFERED BY BUSINESS TECHNOLOGY SECTION (BACHELOR)

WBB20103/MPU3232 - Technopreneurship
Pre-Requisite: Nil
Synopsis:
The module will enhance student's knowledge and skills in business planning, financial management, business operations and marketing. The focus will be on attributes of Technopreneurs, searching for viable opportunities, taking into considerations the trends and new challenges in the business world; and gathering the resources necessary to convert a viable opportunity into a successful business.
References:

1. Azahari Jamaludin, Abd Razak Mohd Yusoff, Mohd Hazli Mohd Rusli, Hamidon Katan, Jimisiah Jaafar, Mohd Fauzi Zainol Abidin, Mohd Radzi Zainuddin, Rosnizza Ramlan, Salwah Che Mat, Zawiah Abdul Majid. (2017), Technopreneurship. Kuala Lumpur: Oxford Fajar
2. Azahari Jamaludin, Abd Razak Mohd Yusoff, Mohd Hazli Mohd Rusli, Hamidon Katan, Jimisiah Jaafar, Mohd Fauzi Zainol Abidin, Mohd Radzi Zainuddin, Rosnizza Ramlan, Salwah Che Mat, Zawiah Abdul Majid. (2013), *Technopreneurship*. Kuala Lumpur: Oxford Fajar.
3. Azahari Jamaludin, Abd Razak Mohd Yusoff, Mohd Hazli Mohd Rusli, Salwah Che Mat, Zawiah Abdul Majid. (2011), *Introduction to Entrepreneurship*. Oxford Fajar
4. Donald F. Kuratko (2013), Entrepreneurship: Theory, Process, Practice 9*th Edition.* Southwestern Cengage Learning.
5. Kamariah Ismail et al. (2009) *Technology Entrepreneurship.* Malaysia: Prentice Hall.
6. Mohd Nazri Khan Adam Khan (2006) *Cyberpreneurship*. Malaysia: Prentice Hall.
7. Hisrich, Peters and Shepherd (2013) *Entrepreneurship,* International 9th Edition. Mc Graw Hill.
8. Kotler, P., Armstrong G. (2014) Principles of Marketing. 15th ed. New Jersey: Prentice Hall.
9. Stevenson, W.J, Sum, C.C (2010) *Operations Management: An Asian Perspective.* McGraw-Hill Education (Asia)
10. Official Website for Intellectual Property Corporation of Malaysia (*MyIPO*) at http://www.myipo.gov.my

MPU 3242/WBB10202 - Innovation Management
Pre-Requisite: Nil
Synopsis:
The concept of innovation as a management discipline focuses on achieving the organizational vision. It searches for unique opportunities in determining whether they fit the organizational strategic direction. The process involves evaluating opportunities and their rate of success.
References:

1. Hamidon Katan, Mohd Radzi Zainuddin, Azahari Jamaludin, Salwah Che Mat, Zawiah Abdul Majid, Suhaiza Ngah, Mohd Hazli Mohd Rusli, Mohd Fauzi Zainol Abidin, Rosnizza Ramlan, Abd Razak Mohd Yusoff, Jimisiah Jaafar, Sudirman Zainal Abidin, Muhammad Pauzi Mushif. (2015) Innovation Management. Kuala Lumpur: Oxford Fajar.
2. Smith, D. (2015) Exploring Innovation. 3rd Ed. UK: McGraw-Hill.
3. Tidd, J. & Bessant, J. (2013) Managing Innovation Integrating Technological, Market and Organizational Change. 5th ed. England: Wiley
4. Kotler, P., Armstrong G. (2014) Principles of Marketing. 15th ed. New Jersey: Prentice Hall.

SIB11203 - Human Resource Management
Pre-Requisite: Nil
Synopsis:
This is an introductory course in human resource management. It is steadily becoming recognized as essential for organization success. HRM is the development and implementation of systems in an organization designed to attract, develop and retain a high performing workforce. The HRM function has developed since the early days of the industrial Revolution, through the 20th century, until today.
References:

1. Maimunah Aminuddin (2018). *Human Resource Management: Principles and Practices (4th edition)*: Oxford Fajar [ISBN9789834725495]
2. Michael L. Nieto (2014), *Human Resource Management*, Palgrave Macmillan ISBN 1137282282, 9781137282286
3. Jean M. Phillips, Stanley M. Gully, (2013), *Human Resource Management, 1st edition*, South-Western Cengage Learning ISBN 1111533555, 9781111533557.
4. Elizabeth D. Fredericksen, Stephanie L. Witt, W. David Patton, Nicholas P. Lovrich (2015), *Human Resource Management: The Public Service Perspective*, Routledge Publisher ISBN 1317418042, 9781317418047
5. Daly, John (2015), *Human Resource Management in the Public Sector: Policies and Practices*, M.E.Sharpe ISBN 0765631210, 9780765631213

SIB12303 - Principles of Marketing
Pre-Requisite: Nil
Synopsis:
A study that builds on evolution of modern management toward a marketing-oriented view of business; stressing the underlying principle of the "marketing concept" and integrating concepts in relation to customer needs, marketing information, product development, pricing, distribution, selling, advertising, and promotions.
References:

1. Philips Kotler & Gary Armstrong (2017). Principles of Marketing (17th Edition). Pearson.
2. Philip Kotler, Kelvin Lane Keller, Swee Hoon Ang, Siew Meng Leong and Chin Tiong Tan. (2012). Marketing Management: An Asian Perspective (Sixth Edition). Pearson.
3. Roger A.Kerin, Lau Geok Theng, Steven W.Hartley, William Rudelius (2013). Marketing in Asia (2nd Edition). McGraw Hill.

SIB11402 - Principles of Management
Pre-Requisite: Nil
Synopsis:
This is an introductory course in management. It is intended to familiarize students with basic principles and concepts of management. Major topic areas include the evolution and scope of management, decision-making, planning, organizing, leading, and controlling. Special attention will be given to the application of the concepts to current issues and challenges facing managers today.
References:

1. Ang Huat Bin (2015). *Principles of Managemen*:Oxford Fajar [ISBN9789834715151]
2. Stephen P. Robbins and Mary Coulter (2002), Management 7th edition. NJ: Prentice Hall
3. Jones, George, Hill. (2000). Contemporary Management 2nd Edition. Irwin McGraw-Hill
4. Daft, Richard L. (2008) New Era of Management 9th Edition. South Western.
5. Norlida Kamaluddin,Za'faran Hassan,Rabiah Abdul Wahab and Rohaya Mohd Hussein (2014). *Principles of Management (2nd edition)*: Oxford Fajar [ISBN9789834711948].
6. Wan Arfah Wan Hamzah (2009). A First Look at the Malaysian Legal System. Shah Alam: Oxford Fajar.
7. Goh Chen Chuan (2008). Step by step guide to company formation in Malaysia. Kuala Lumpur: Leeds Publications.
8. Lee Mei Pheng & Ivan Jeron Detta (2005). General Principles of Malaysian Law (5th Edition). Shah Alam: Oxford Fajar.
9. Relevant Statutes (Latest Amendments):
   Companies Act 1965.
   Consumer Protection Act 1999.
   Contract Act 1950.
   Copyright Act 1987.
   Employment Act 1955.
   Hire Purchase Act 1967.
   Partnership Act 1961.
   Registration of Businesses Act 1956.
   Sales of Goods Act 1957.

SIB12503 - Principles of Accounting
Pre-Requisite: Nil
Synopsis:
Principle of Accounting subject provides students with an introduction to accounting in the context of business decisions, emphasizing the skills and knowledge that will be used in the work environment and accordance to Malaysian Accounting Standard Board (MASB). Core topics include the nature of business decisions, short-term and long-term/strategic decision-making models, accounting treatment ideas, and budgeting and associated performance measurement practices.
References:

1. Alan Sangster and Frank Wood (2015). Frank Wood's Business Accounting 1 (13th Ed) Pearson Prentice Hall (ISBN13:9781292084664)
2. Belverd E Needles, Susan V. Crosson and Marian Powers (2014). Principle of Accounting (12th Ed): South-Western Cengage Learning. (ISBN13:978113362698S)
3. Jerry J. Weygant, Paul D. Kimmel and Donald E.Kieso(2015). Accounting Principle (ISBN13: 9781118875056)

SIB23103 - Purchasing Management
Pre-Requisite: Nil
Synopsis:
The effective management of the purchasing department is essential to the success of a firm. This course will discuss the contribution that purchasing makes to the competitive advantage of a firm, based on theories of strategic management. Some firms aim to become preferred customers of their strategic suppliers. Success in this positioning subsequently determines the firm's strategic options. In our vision, the Chief Purchasing Officer should hold a position on the firm's board. Purchasers should be fully equipped to engage in discussion at the board level. The strategy component of this course contributes to this purpose.
References:

1. Robert M. Monczka,Robert B. Handfield, Larry C.Giunipero & James L. Patterson (2016), Purchasing and Supply Chain Management (6th Edition), Cengage Learning.
2. Thomas E. Johnsen, Mickey Howard & Joe Miemczyk (2014), *Purchasing and Supply Chain Management: A Sustainablity Perspectives.* Routledge, Taylor and Francis Group.
3. Kenneth Laysons & Brian Farrington (2016), *Procurement and Supply Chain Management (9th Edition),* Pearson Education Limited. ISBN 1292086149, 9781292086149
4. Arjan J. Van Weele (2010), *Purchasing and Supply Chain Management: Analysis,Strategy,Planning & Practice*(5th Edition), Cengage Learning.

SIB12203 - Business Mathematics
Pre-Requisite: Nil
Synopsis:
This is an introductory course for business mathematics which exposes the students with various mathematical methods and techniques in solving business related problems. It is essential for students to understand mathematical concepts and techniques to optimize the cost and raw materials in business related application.
References:

1. Barry Render, Ralph M. Stair Jr., Michael E.Hanna, Trevor S.Hale (2014). *Quantitative Analysis for Management (13th edition):* Pearson Education. [ISBN9780134543161]
2. David R. Anderson, Dennis J. Sweeney, Thomas A. Williams, Jeffrey D. Camm, James J. Cochran,Micheal J. Fry, Jeffrey W. Ohlmann (2014) , *Introduction to Management Science: Quantitative Approaches to Decision Making (14th Edition*) , Cengage Learning ISBN 9781111823610.
3. David R. Anderson, Dennis J. Sweeney, Thomas A. Williams, Jeffrey D. Camm, James J. Cochran (2013) , *Statistics for Business and Economics (12th Edition)* , Cengage Learning ISBN 9781133274537.
4. Bernard W. Taylor (2015), *Introduction to Management Science*, Global Edition, Pearson, ISBN 9781292092911.

SIB23302 - Business law and Policy
Pre-Requisite: Nil
Synopsis:
This course introduces students to the basic legal system in Malaysia and the use of business law. It provides a basic knowledge of business law which controls every aspect of business conduct in the business world in Malaysia. It also introduces and examines the main areas of law that regulate the business environment in Malaysia.
References:

1. Lee Mei Pheng (2016). Business Law (Second Edition). Shah Alam: Oxford Fajar.
2. Lee Mei Pheng & Ivan Jeron Detta (2014). Business Law (Second Edition). Shah Alam: Oxford Fajar.

SIB12703 - Consumer Behaviour
Pre-Requisite: Nil
Synopsis:
This is an introductory course in consumer behaviour. It is intended students understanding with the concepts of consumer behaviour. The topics been discussed are including consumer needs, products positioning,marketing strategies and decision making.
References:

1. Schiffman, Wisenblit (2018), Consumer Behavioiur, 12th Edition, Pearson.
2. Schiffman, Leon G. (2014), Consumer Behaviour, 6th Edition, Pearson.
3. Parson, Maclaran (2009), Contemporary Issues in Marketing and Consumer Behaviour, BH
4. Solomon, Michael R, Consumer Behavior: Buying, Having and Being, 7th Edition, Pearson Education International, 2007.
5. Blackwell, Roger D, miniard and Engel, Consumer Behavior, 10th Edition, Thomson Southwestern, 2006).

SIB24103 - Introduction to Statistical Analysis
Pre-Requisite: Nil
Synopsis:
This is an introductory course for statistical analysis which exposes the students with various statistical methods and techniques in solving business related problems. It is essential for students to understand statistical concepts and techniques in solving and optimizing business related application.
References:

1. Barry Render, Ralph M. Stair Jr., Michael E.Hanna, Trevor S.Hale (2015). *Quantitative Analysis for Management (13th edition)*: Pearson Education. [ISBN9780134543161].
2. David R. Anderson, Dennis J. Sweeney, Thomas A. Williams, Jeffrey D. Camm, James J. Cochran,Micheal J. Fry, Jeffrey W. Ohlmann (2014) , *Introduction to Management Science: Quantitative Approaches to Decision Making (14th Edition)* , Cengage Learning ISBN 9781111823610.
3. David R. Anderson, Dennis J. Sweeney, Thomas A. Williams, Jeffrey D. Camm, James J. Cochran (2013) , *Statistics for Business and Economics (12th Edition)* , Cengage Learning ISBN 9781133274537.
4. Bernard W. Taylor (2015), *Introduction to Management Science, Global Edition, Pearson*, ISBN 9781292092911.

SIB23203 - Management Accounting
Pre-Requisite: SIB12503- Principles Accounting
Synopsis:
Management Accounting subject provides students with an introduction to management accounting in the context of business decisions, emphasizing the skills and knowledge that will be used in the work environment. Core topics include the nature of business decisions, short-term and long-term/strategic decision-making models, cost management ideas, and budgeting and associated performance measurement practices.
References:

1. MY Khan. and PK Jain (2016). Management Accounting: Text, Problems and Cases (7th Ed): McGraw Hill
2. A.Murthy and S.Gurusamy (2013). Management Accounting (2nd Ed). McGraw Hill.
3. Langfield-Smith, Kim, Thorne, Helen, Hilton and Ronald (2012). Management Accounting: Information Creating and Managing Value (6th Ed). McGraw Hill

SIB24603 - Automotive Safety
Pre-Requisite: Nil
Synopsis:
This course provides the students with the knowledge on the legislation of the automotive safety and the process involved in developing the legislations. It also covers the tests conducted to establish limitations in the rule-making process. In addition, the students will be exposed on different type of collisions, basic criteria in designing vehicle as well as pedestrian protection.
References:
1. Gonter, M. & Seiffert, U. W. (2013). Integrated Automotive Safety Handbook. USA: SAE International.
2. Ross, H-L. (2016). Functional Safety for Road Vehicles. Switzerland: Springer International Publishing.

SIB23403 - Management Information Systems
Pre-Requisite: Nil
Synopsis:
This course focuses on management information systems (MIS) in today's organizations. It introduces the principles of MIS and its applications in organizations. Besides that, it provides students with the educational background to the technologies of information systems. The course will expose the students to the managerial issues relating to information systems and help them identify various options in MIS. Please note that the material presented in this course takes a management approach rather than a technical approach.
References:
1. Kenneth C. Laudon, Jane P. Laudon (2017). Essentials of MIS (12th Edition). UK: Pearson.
2. David M. Kroenke, Andrew Gemino, Peter Tingling (2016). Experiencing MIS (4th Canadian Edition). Toronto: Pearson.
3. John Gallaugher (2017). Information Systems: A Manager's Guide to Harnessing Technology (Version 6.0). Boston: FlatWorld.
4. Kenneth C. Laudon, Jane P. Laudon (2016). Management Information Systems: Managing the Digital Firm (14th Edition). UK: Pearson.
5. Baltzan, P., Detlor, B., & Welsh, C. (2015). Business Driven Information Systems (4th Canadian Edition). Canada: McGraw Hill Ryerson Press.
6. Earl H. McKinney Jr., David M. Kroenke (2015). Processes, Systems, and Information: An Introduction to MIS (2nd Edition). UK: Pearson.

SIB23503 - Professional Business Practices and Ethics
Pre-Requisite: Nil
Synopsis:
In this course, the student learnt the ethics and professionalism in business. It covers of responsible professionals and corporations, moral reasoning and codes of ethics, Moral frameworks, Business as Social Experimentation, commitment to Community and country.
References:
1. Eugene Heath, Byron Kaldis (2017) Wealth, Commerce, and Philosophy: Foundational Thinkers and Business Ethics. University of Chicago Press.
2. Jacob Dahl Rendofth. (2017). Cosmopilitan Business Ethics: Toward a Global Ethos of Management.
3. Patricia H. Werhane, R. Edward Freeman, Sergiy Dmytriyev, Cambridge Handbook of Research Approaches to Business Ethics and Corporate Responsibility
4. Sayyid Muhammad Rizvi (2017) Islamic Business Ethics. CreateSpace Independent Publishing Platform
5. Abbas j. Ali. Edt. (2015) Handbook of Research on Islamic Business Ethics.
6. Mike W. Martin Roland Schinzinger (2010). Introduction to Engineering Ethics second Edition, McGraw-Hill Higher Education.
7. Govindarajan M, Natarajan S, Senthil Kumar V. S (2004.) Engineering Ethics", Prentice Hall.
8. Charles E. Harris, Michael S. Pritchard and Michael J. Rabins, (2009). Engineering Ethics Concepts and Cases", Cengage Learning,
9. Laura P. Hartman and Joe Desjardins (2013) "Business Ethics: Decision Making for Personal Integrity and Social Responsibility" Mc Graw Hill education, India Pvt. Ltd.,New Delhi
10. Mardzelah Makhsin (2007) Sains Pemikiran & Etika. PTS Professional. ISBN 983-3585-67-1
11. Abulhasan Muhammad Sadeq, Khaliq hmad. (2001) Ethics in Business and Management. Asean Academic.
12. Mohd Nasir Omar (2010), Falsafah Akhlak. Penerbitan UKM. ISBN 978-967-942-922-0
13. Abul Hasan Muhammad Sadqe, Khaliq Ahmad. (2001). Ethics in Business Management: Islam and Mainstream approaches.
14. Charles B. Fledderment (2012). Engineering Ethic Fourth Edition, Prentice Hall, ISBN-13: 978-0-13-214521-3
15. Abbas J. Ali. (2014) Business Ethic in Islam. Edward Edgar Publishing. ISBN: 978 781000 672 6
16. Veland Ramadani, Leo-Paul Dana, Shqide Gerguri-Rashiti, Vanesssa Ratten. Edt.(2017) Enterpreneurship and Management in an Islamic context. Springer.

SIB24203 - Research Methodology
Pre-Requisite: Nil
Synopsis:
This course is aimed to develop a research orientation among the scholars and to acquaint them with fundamentals of research methods. Specifically, the course aims at introducing them to the basic concepts used in research and to scientific social research methods and their approach. It includes discussions on sampling techniques, research designs and techniques of analysis
References:
1. Alan Bryman, Emma Bell (2015). *Business Research Methods (4th edition)*: Oxford University Press. [ISBN 9780199668649].
2. William G. Zikmund, Barry J. Babin, Jon C. Carr, Mitch Griffin (2013), *Business Research Methods (9th Edition)*, Cengage Learning ISBN 97801111826949.
3. S. Sreejesh, Sanjay Mohapatra, M.R. Anusree (2014) , *Business Research Methods: An Applied Orientation*, Springer ISBN 9783319005386.
4. Donald Cooper, Pamela Schindler (2013), *Business Research Methods (12th Edition),* Mc Graw-Hill, ISBN 9780077774431.

SIB24403 - Supply Chain Management
Pre-Requisite: Nil
Synopsis:
A firm's supply chain consists of all operational processes that create value for the firm. Supply chain management therefore involves the coordination of multiple value-creating processes that typically fragmented and dispersed across organizational and national boundaries. This fragmentation creates opportunities (e.g. lower costs) but also challenges (e.g. longer lead times). Firms therefore need to find a way to exploit the benefits provided by fragmented supply chains, while making sure that the challenges are managed effectively. We will also discuss the relationship between supply chain management and sustainability. The goal of the course is to develop a framework to address a variety of supply chain management challenges.
References:
1. Wisnern,Tan & Leong (2016), *Principles of Supply Chain Management: A Balanced Approach(4th Edition):* Cengage Learning.
2. David Blanchard (2010), *Supply Chain Management: Best Practices (2nd Edition), John* Wiley & Son.
3. David Frederick Ross (2011), *Introduction to supply Chain Management Technologis (2nd Edition), Taylor & Francis Group.*
4. Sunil Chopra & Peter Meindl (2015), *Supply Chain Management: Strategy, Planning, and Operation (6th edition),* Pearson Education.

SIB35103 - Automotive Shop Management and Supervision
Pre-Requisite: Nil
Synopsis:
This course covers the principles of management essential to decision-making, communication, authority, and leadership. Topics include shop supervision, shop organization, customer satisfaction and cost effectiveness. Upon completion, students should be able to describe basic automotive shop operation from a management standpoint.
References:
1. Edwin C. Leonard,Jr & Kelly A. Trusty (2016). *Supervision: Concept and Practices of Management. (13th edition):* Cengage learning ISBN 9781285866376.Mitch Schneider, (2003) *Total Customer Relationship Management, Automotive* Service Management Series: Thomson Delmar Learning.
2. Mitch Schneider, (2003) *Operational Excellence:* Automotive Service Management Series: Thomson Delmar Learning.
3. Jay Heizer, Barry Render, (2015) *Operations Management (10th edition)*: Pearson.

SIB11101 - Industrial Attachment 1
Pre-Requisite: Nil
Synopsis:
This course is designed to provide students with technical knowledge and experience through extensive exposure in real industrial environments to enhance their competency and professionalism.
References:
Universiti Kuala Lumpur (2016). Industrial Training Student Handbook and Logbook (6th Ed). Universiti Kuala Lumpur: Kuala Lumpur.

SIB21101 - Industrial Attachment 2
Pre-Requisite: SIB11101 Industrial Attachment 1
Synopsis:
This course is designed to provide students with technical knowledge and experience through extensive exposure in real industrial environments to enhance their competency and professionalism.
References:
Universiti Kuala Lumpur (2016). Industrial Training Student Handbook and Logbook (6th Ed). Universiti Kuala Lumpur: Kuala Lumpur.

SIB35203 - Automotive Parts and Service Management
Pre-Requisite: Nil
Synopsis:
Automotive have become so complex in the last 25 years that, to remain competent, many of today's automotive specialists have knowledge on one or more systems of the car. Performed in almost any automotive repair facility, inspection and service procedures, from safety inspections to tire and wheel service.
References:
1. Tim Gilles. (2015). Automotive Service: Inspection, Maintenance, Repair, 5th Edition. USA: Delmar, Cengage Learning.
2. B.P. Bhardwaj. (2014). The Complete Book on Production of Automobile Components & Allied Products.
3. Jack Erjavec & Rob Thompson. (2014) Automotive Technology: A Systems Approach 6th Ed. Cengage Learning.

SIB24302 - Business Communication
Pre-Requisite: Nil
Synopsis:
Business Communication introduces you to a variety of technical and business writing theories and practices designed to be applicable to the production of business communication in the real world. It teaches the fundamentals of good business writing, including protocols for business letters, memoranda, electronic mail, good and bad messages, persuasive messages and formal reports and proposals. In addition, there will be instruction in oral presentation and in-depth practice on both an individual and a collaborative basis. Students will learn how to enhance their business communication with technically based media.
References:
1. Mary E.G. & Dana L. (2018). *Business Communication*: *Process and Product* 9th edition. Cengage Learning [ISBN9781305957961].
2. Mary E.G. & Dana L. (2016). *Essentials of Business Communication 10th edition*. Cengage Learning [ISBN9781285858913].
3. Newman. (2017). *Business Communication: In Person,In Print, Online* 10th edition. Cengage Learning [ISBN9781305500648].
4. Thill J. V. Thill & Bovee C.L (2017) Excellence in Business Communication, 12th Edition, Pearson Publication

SIB35303 - Automotive Engineering Fundamentals
Pre-Requisite: Nil
Synopsis:
This subject is emphasized to expose the students about the fundamental of automotive technology, drive line, drive train, vehicle construction and application of vehicle function.
References:
1. Erjavec, J. and Thompson, R. (2015). Automotive Technology: A Systems Approach. (6th ed.). Clifton Park (NY), USA: Cengage Learning.
2. Halderman, James D. (2015). Automotive Technology: Principle, Diagnosis and Service. (5th ed.). Upper Saddle River (N.J): Pearson Prentice Hall.
3. Duffy, James E. (2013). Modern Automotive Technology. (8th ed.). Tinley Park (IL): Goodheart-Willcox Company.
4. CDX Automotive (2013). Fundamentals of Automotive Technology: Principles and Practice. Burlington (Mass.) : Jones & Bartlett Learning.
5. Paul Nieuwenhuis, Peter Wells. (2015). The Global Automotive Industry, Wiley 1st Ed.

SIB24503 - IoT Data Analytics
Pre-Requisite: Nil
Synopsis:
This course introduces students to IoT analytics, data science and statistic. Practical techniques for data pre-processing, data analysis and data visualisation are examined, coupled with study in descriptive and inferential statistics. Students will build analytical and practical skills in data analysis and data visualisation. This course presents these topics within a framework that focuses on developing communication and domain problem-solving skills.
References:
1. Hwaiyu Geng, (2017). Internet of Things and Data Analytics Handbook, John Wiley & Sons.
2. Runkler, T.A., (2016). Data Analytics: Models and Algorithms for Intelligent Data Analysis (2nd Edition). Springer Fachmedien Wiesbaden. [ISBN3658140747, 9783658140748].
3. Kabacoff, R., (2015). R in Action: Data Analysis and Graphics with R (2nd edition). Manning Publications. [ISBN-13: 978-1617291388]

SIB36403 - Operation Management
Pre-Requisite: Nil
Synopsis:
This course widely covers the body of knowledge of operation management in the industrial sector including the automotive manufacturing sector. The emphasize of the course will be given on the topic of operation strategy, project management, production system design, forecasting and aggregate planning, material requirement planning and inventory management.
References:
1. Heizer, J., & Render B. (2014). Operations Management (11th ed.). New Jersey: Pearson Education.
2. Rosliza Md Zani & Mohd Radzi Mohd Khir. (2016). Operations Management (1st ed.). Shah Alam: Oxford Fajar.

SIB35403 - Automotive Business & Sales Management
Pre-Requisite: Nil
Synopsis:
This course discusses the most recent sales management research with real-life of leading sales organizations. The syllabus focuses on the importance of employing different sales strategies for different consumer groups, as well as integrating corporate, business, marketing, and sales strategies.
References:
1. Thomas N.Ingram, Raymond W. LaForge, Ramon A.Avila, Charles H. Schwepker, Jr., Michael R. Williams (2015). Sales Management Analysis and Decision making (9th Edition). Routledge.
2. Jens Diehlmann, Prof. Dr. Joachin Hacker (2013). Automotive Management (2nd Edition). Oldenbourg Verlag Munchen.
3. Paola Guenzi, Susi Geiger (2011). Sales Management: A Multinational Perspective. Palgrave Macmillan.

SIB35503 - Automotive Marketing Management
Pre-Requisite: Nil
Synopsis:
This course builds on the Introduction to Marketing course, examining the five functions of marketing management necessary to meet the marketing objectives of a firm. These functions are: planning, organizing, coordinating, evaluating, and controlling, in the management of the four marketing components of product/service, distribution, price, and promotion. Emphasis is placed on competitive analysis, decision-making skills, communications, and customer service. This course makes extensive use of the case study method of analysis as a basis for class discussion.
References:
1. Philip Kotler, Kelvin Keller, Mairead Brady, Malcolm Goodman, Torben Hansen. (2016). Marketing Management. (3rd Edition). Pearson Education Limited.
2. Brian F. Pasch. (2017). Mastering Digital Automotive Marketing (Fifth Edition). PCG Companies, Inc.
3. Alan Zimmerman, Jim Blythe. (2013). Business to Business Marketing Management: A Global Perspective (Second Edition). Routledge.
4. Robert E Stevens, David Loudon, Bruce Wrenn. (2007). Marketing Management: Text and Cases. Routledge.

SIB31101 - Pre Project
Pre-Requisite: SIB21101 Industrial Attachment 2
Synopsis:
This is a level 1 course in Theory of Inventive Problem Solving/ TRIZ. It is intended to familiarize students with basic principles and concepts of engineering problem solving method. Major topic areas include the structured problem-solving process, TRIZ models and tools and engineering contradiction. Special attention will be given to the application of the technology trends analysis today.
References:
1. TRIZ: Systematic Innovation in Manufacturing. T.S Yeoh.: Mc Graw Hill. [QH308.2 P745 2011]
2. TRIZ: Systematic Innovation in Business & Management. T.S Yeoh: Pearson Prentice Hall. [QH 308.2.F74 2015]

SIB36103 - Automotive Sales Concepts and Applications
Pre-Requisite: SIB21101 Industrial Attachment 2
Synopsis:
This is an introductory course in sales concept which can be applied in any field and industry. The topics discussed are including from sales process, strategies and decision making.
References:
1. Johnston, Marshall (2016), Sales Force Management (Leadership, Innovation, Technology), 12th Edition, Routledge.
2. M.I Seka (2013) Becoming an Automotive Sales Professional: A real world, step-by-step tutorial on achieving success in the Profession of Automotive Sales, Providential Press.
3. Johnston, Marshall (2011), Sales Force Management, 10th Edition, McGraw-Hill/Irwin.
4. Joseph F. Hair et al (2009), Sales Management: building customer relationships and partnerships, Boston: Houghton Mifflin Co.
5. Donaldson (2007) Sales Management: principle, process and practice, 3rd Edition, New York: Palgrave Macmillan

SIB36206 - Final Year Project
Pre-Requisite: SIB31101 Pre Project
Synopsis:
References:

SIB23603 -Franchise Business Management
Pre-Requisite: Nil
Synopsis:
This course introduces the students to opportunities in franchising. It is designed for students who hope to start a franchise business (franchisee) and to those learners who hope to franchise their business (franchisor). It covers the important aspects of starting, developing and managing a new franchise. It examines the principles and practices of franchise operations.
References:
1. Carl Reader (2016). The Franchising Handbook: How to Choose, Start & Run a Successful Franchise. United Kingdom: Quercus.
2. Jason R. Anderson (2017). How to Franchise Your Business: A Step by Step Approach to turn Your Business, or idea into a Franchise. ISBN: 9781547108985.
3. Mark Siebert (2016). Franchise Your Business: The Guide to Employing the Greatest Growth Strategy Ever. California: Entrepreneur Press.
4. Michael A. Peterson (2016). How and Why to Franchise Your Business: Go Form Small Business Owner to Franchisor. ISBN: 978-1540372840.
5. Andrew J. Sherman (2011). Franchising & Licensing: Two Powerful Ways to Grow Your Business in Any Economy (Fourth Edition). New York: American Management Association.

SIB23703 - International Entrepreneurship
Pre-Requisite: Nil
Synopsis:
Business ventures are becoming increasingly global. This course introduces the students to attractiveness and opportunities in international entrepreneurship. It is designed for students who hope to start, join or hold stakes in international ventures. It covers the aspects of starting, developing and managing a international business venture. Besides that, this course addresses the issues specific to international venturing.
References:

1. Robert D. Hisrich (2016). International Entrepreneurship: Starting, Developing and, Managing a Global Venture. Third Edition. USA: Sage Publications Inc.
2. Dianne H.B. Welsh, Shawn M.Carraher (2018). Global Entrepreneurship (Third Edition). Dubuque: Kendall Hunt Publishing Company.
3. Heidi M. Neck, Christopher P. Neck & Emma L. Murray (2017). Entrepreneurship: The Practice and Mindset. United Kingdom: Sage Publications.
4. Paul Burns (2016). Entrepreneurship and Small Business: Start-up, Growth and Maturity (Fourth Edition). United Kingdom: Palgrave Macmillan.
5. Antonella Zucchella, Paolo Scabini (2014). International Entrepreneurship: Theoretical Foundations and Practices. United Kingdom: Palgrave MacMillan.

SIB35603 - Economics of Innovation and Entrepreneurship
Pre-Requisite: Nil
Synopsis:
The course strives to distinguish the role of the capitalist from that of an entrepreneur, and to show how the actions of the entrepreneur impact new employment, economic growth, and advancements in the overall standard of living. The course provides in-depth discussion of several critical concepts: the economic development of a product; Schumpeter's "temporary monopoly control;" the economic bounds of product and process innovations; and changing production functions. It also develops and integrates an analysis of how innovation-induced modifications in either products or processes affect both short-run and long-run average costs in production. This course makes extensive use of the case study method of analysis as a basis for class discussion
References:

1. Bruce A.McDaniel (2015). Entrepreneurship and Innovation: An Economic Approach. Routledge.
2. Charlie Karlsson, Urban Grasjo, Sofia Wixe. (2015). Innovation and Entrepreneurship in the Global Economy: Knowledge, Technology and Internationalization. Edward Elgar Publishing.
3. G.M. Peter Swann. (2009). The Economics of Innovation: An Introduction. Edward Elgar Publishing.

SIB35703 - Strategic Management
Pre-Requisite: Nil
Synopsis:
This course introduces the key concepts, tools, and principles of strategy formulation and competitive analysis. It is concerned with managerial decisions and actions that affect the performance and survival of business enterprises. The course is focused on the information, analyses, organizational processes, and skills and business judgment managers must use to devise strategies, position their businesses, define firm boundaries and maximize long-term profits in the face of uncertainty and competition. Strategic Management is an integrative and interdisciplinary course. It assumes a broad view of the environment that includes buyers, suppliers, competitors, technology, the economy, capital markets, government, and global forces and views the external environment as dynamic and characterized by uncertainty.
References:

1. Luke Ike (2017), *Strategic Management: Concepts and Practices*, Xlibris publisher ISBN 9781524597580.
2. Frank T. Rothaermel (2013) , *Strategic Management 2e* , Mc Graw Hill ISBN 9780077645069.
3. Charles W.L. Hill, Gareth R. Jones, Melissa A. Schilling (2015) , *Strategic Management Theory (11th edition)* , Cengage Learning ISBN 9781285184494.
4. Rodrigue Fontaine, Khaliq Ahmad (2013), *Strategic Management From An Islamic Perspective,*Wiley, ISBN 9781118553053.
5. Zainol Abidin Mohamed,Ho Jo Ann, Wong Foong Yee (2014). *Strategic Management (2nd edition)*: Oxford University Press. [ISBN9789834710446]

SIB24703 - Automotive Financial Management
Pre-Requisite: Nil
Synopsis:
Automotive Financial Management provides the route to understanding the financial decision-making process and to interpreting the impacts that financial decisions have on value creation.
References:

1. Eugene F. Brigham and Joel F. Huston (2016). Fundamentals of Financial Management (14th): Cencage Learning. [ISBN 13:978.1.285.86797.7]
2. Bhahatosh Banerjee (2015). Fundamentals of Financial Management (2nd Ed). PHI Learning Private Limited. [ISBN 9788120351141].
3. James C Van Horne and John Martin Wachowicz (2005).Fundementals of Financial Management. Financial Times Printice Hall (12thEd). (ISBN: 9780273706878)

SIB24803 - Automotive Commercial Relationships
Pre-Requisite: Nil
Synopsis:
Many firms recognise the importance of establishing and sustaining mutually beneficial relationships with customers and have developed commercial relationship strategies. In this course, we examine Automotive Commercial Relationship as a business strategy that integrates internal processes and external networks to create and deliver value for targeted customers and for the organisation. We will take a broader view of 'marketing' than just designing a product, advertising, pricing and distributing it to consumers. It examines the role that stakeholders, such as internal staff, suppliers and influence groups, play in shaping relationships with customers.
References:

COURSE OFFERED BY BUSINESS TECHNOLOGY SECTION (MASTER)

SLG 61303 - Strategic Management
Pre-Requisite: Nil
Synopsis:
This course introduces the key concepts, tools, principles of strategy formulation, competitive analysis and control of technological capabilities to shape and influence the organization's strategic goals. It is concerned with the integration of technological considerations into the broader strategy of the organization, managerial decisions and actions that affect the performance and survival of business enterprises. This approach ensures that technology is leveraged as a critical resource for achieving strategic objectives, driving innovation, and sustaining competitive advantage in a rapidly evolving business environment.

References:
1. Frank. T. Rothemel (2021) Strategic Management (6th Ed.) Mc Graw Hill Education.
2. Philip T. K. & Gary, A (2023). Principle of Marketing, An Asian Perspective, Global edition. (5th Ed,) Pearson Higher Ed.

SLG 61203 - Innovation Technology and Entrepreneurship
Pre-Requisite: Nil
Synopsis:
This course prepares postgraduate students to be business technologist with research and entrepreneurship capabilities. It discusses analyses and resolves issue relate to innovation, marketing, intellectual property and government policies. Case studies and assignments involve those of local and world scenarios.

References:
1. Natasha Evers, James Cunningham, Thomas Hoholm. (2021). Technology Entrepreneurship: Bringing Innovation to the Marketplace. Macmillan Education Limited.
2. Mike Kennard (2021) Innovation and Entrepreneurship (Management Practice Essentials). (1st Ed.). Routledge.

SLG 62203 - Managerial Economics
Pre-Requisite: Nil
Synopsis:
Managerial Economics is a targeted course aimed at both emerging and established entrepreneurs, offering essential economic insights and technological tools for thriving in business ventures. By integrating core economic principles with the latest technological advancements, this course equips entrepreneurs with the expertise needed to make strategic decisions, streamline operations, and drive innovation in a competitive environment.

References:
Main References:
1. Ivan Png (2022). Managerial Economics (6th ed.) Routledge.
2. Seyed Ali Fallahchay (2020). The Economics of Innovation. e-book Edition 2020. Society Publishing.

Additional References:
1. Christopher R. Thomas, S. Charles Maurice (2024). Managerial Economics: Foundation of Business Analysis and Strategy. McGraw-Hill Education.
2. Jeffrey M. Perloff. (2020). Managerial Economics and Strategy (3rd ed.) Pearson.
3. Baye, M. R. (2017). Managerial Economics and Business Strategy (8th ed.). Boston: McGraw-Hill Irwin.

SLG 61403 - Cloud Based Technology
Pre-Requisite: Nil
Synopsis:
This course covers cloud computing models, techniques, and architectures. The course will expose the current practices in cloud computing including distributed computing models and technologies, Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS), Software-as-a-Service (SaaS), virtualization, security and privacy issues, performance and systems issues, capacity planning, disaster recovery, Cloud OS, federated clouds, challenges in implementing clouds, data centres, hypervisor CPU and memory management, cloud hosted applications, and other advanced and research topics in cloud computing. The course will assess and evaluate the implementation of cloud computing in selected industrial engineering areas such as operation research and management, manufacturing engineering, production planning and control, product development etc. The course will develop a proposal of adopting cloud computing technology for selected industries.

References:
Main References:
1. Sunil Kumar Manvi & Gopal Krishna Shyam (2021) Cloud Computing Concepts and Technologies
2. Cloud Computing: Theory and Practice/Dan C. Marinescu. (2022). 3rd Edition. Morgan Kaufmann.

Additional References:
1. The cloud computing book: The future of computing explained / Douglas E. Comer, Department of Computer Sciences, Purdue University, West Lafayette. (2021).

SLG 62103 - Information Technology in Project Management
Pre-Requisite: Nil
Synopsis:
This course provides an in-depth exploration of how information technology integrates with project management principles to enhance project outcomes. Students will gain foundational knowledge in project management while learning to leverage IT tools and techniques for effective project planning, execution, and control. The course covers essential IT-related aspects of project management, including stakeholder management, project scheduling, and the use of specialized software.

References:
1. Eric Verzuh (2021). The Fast Forward MBA in Project Management (Fast Forward MBA series) (6th Edition). John Wiley & Sons.
2. Efraim Turban, Carol Pollard, Gregory Wood. (2021). Information Technology for Management: Driving Digital Transformation to Increase Local and Global Performance, Growth and Sustainability 12th Edition. Wiley.

Additional References:
1. Peter Ekman, Peter Dahlin and Christina Keller. (2022). Management and information technology after digital transformation.

SLG 62303 - Financial Information and Analysis
Pre-Requisite: Nil
Synopsis:
This course introduces students to the use of financial information in decision-making, with a focus on integrating technology. Students will learn to analyse and interpret financial statements using advanced digital tools. The course emphasizes the impact of financial reporting on profitability and risk assessments, leveraging technology for deeper insights. Key topics include credit and investment analysis, competitor evaluation, and company valuation. Modern financial software and data analytics are central to the course, equipping students with tech-driven analytical skills. By the end, students will be prepared to make informed financial decisions in a digital landscape.

References:
1. Martin S. Fridson; Fernando Alvarez, Financial Statement Analysis: A Practitioner's Guide, Wiley, Year: 2022.
2. Abdul Majid, J. 2022. Analysis and Use of Financial Statements. UUM.

Additional References:
Subramanyam, K.R., and Wild, J.J. (2014). Financial Statement Analysis. 11th Edition. Irwin: McGraw-Hill. Title: Financial Statement Analysis 11th Edition.

SLG 61103 - Research Methodology
Pre-Requisite: Nil
Synopsis:
This course provides a comprehensive understanding of research processes, covering scientific and alternative investigation methods. Key topics include problem definition, critical literature review, theoretical frameworks, hypothesis development, measurement of variables, sampling techniques, and quantitative data analysis. Students will develop skills to conduct effective research, analyse data, and apply these methodologies to various academic and professional contexts.

References:
1. Bryman, A., & Bell, E. (2022). Business research methods (6th ed.). Oxford University Press.
2. Sekaran, U., & Bougie, R. (2020). Research methods for business: A skill-building approach (8th ed.). Wiley.

Additional References:
1. Creswell, J. W., & Creswell, J. D. (2018). Research design: Qualitative, quantitative, and mixed methods approach (5th ed.). Sage.
2. Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). A primer on partial least squares structural equation modelling (PLS-SEM) (3rd ed.). Sage.
3. Kumar, R. (2018). Research methodology: A step-by-step guide for beginners (5th ed.). Sage.

SLG63110 - Master Project in Technology
Pre-Requisite: Nil
Synopsis:
This course is designed to guide students through the process of conducting a substantial, independent research project. The course integrates knowledge acquired throughout the program, emphasizing research design, data analysis, and the application of technology-driven solutions to business challenges. Students will produce a comprehensive research report and present their findings to an academic panel.

References:
UniKL Postgraduate Thesis Guideline (2018)
1. Sekaran, U., & Bougie, R. (2020). Research methods for business: A skill-building approach (8th ed.). Wiley.
2. Bryman, A., & Bell, E. (2022). Business research methods (6th ed.). Oxford University Press.
3. Creswell, J. W., & Creswell, J. D. (2018). Research design: Qualitative, quantitative, and mixed methods approach (5th ed.). Sage.
4. Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). A primer on partial least squares structural equation modelling (PLS-SEM) (3rd ed.). Sage.
5. Kumar, R. (2018). Research methodology: A step-by-step guide for beginners (5th ed.). Sage.

SLG61603 - Technology Management
Pre-Requisite: Nil
Synopsis:
Technology Management course typically covers a range of topics that blend the principles of management with the understanding of technology's role in organizations. Technology Management is a multidisciplinary field that integrates technology and business management. It focuses on the strategic use of technology to drive innovation, improve processes, and enhance organizational performance. The goal is to align technological capabilities with business objectives, ensuring that technology serves as a key enabler of competitive advantage and growth. This syllabus is designed to provide students with a comprehensive understanding of how to manage technology within organizations effectively, from strategic planning to practical implementation.

Reference:
1. Gustavo Giannattasio, Elif Kongar, Marina Dabić, Celia Desmond, Michael Condry, Sudeendra Koushik, Roberto Saracco (Editors) (2023). IEEE Technology and Engineering Management Society Body of Knowledge (TEMSBOK). IEEE Press & Wiley.

Additional Reference:
1. Dilek Çetindamar, Robert Phaal, and David Probert (2017). Technology Management: Activities and Tools (2nd Edition). Red Globe Press.
2. Scott Shane (2008). Handbook of Technology and Innovation Management. John Wiley & Sons.
2. 3. Tarek Khalil (2000). Management of Technology: The Key to Competitiveness and Wealth Creation. McGraw-Hill Education.

SLG61503 - Sustainable Product Development
Pre-Requisite: Nil
Synopsis:
This course offers a comprehensive exploration of managing creativity and innovation processes for sustainable products. The curriculum encompasses the entire lifecycle of sustainable research and design (R&D) product development management, from initial product definition to sustainable product development practices and financial modelling, all within the framework of the "triple bottom line" - economy, environment, and society. Throughout the course, students will learn to gather and prioritize customer and user needs, develop detailed product specifications, create prototypes, and maintain ongoing engagement with customers or communities during the product development phase. This experiential learning approach ensures that students acquire skills in development of technology acquisition and evaluation, which is a relatively straightforward process compared to data acquisition and evaluation for technology gaps and opportunities.

The course covers key topics such as sustainable new product development and entrepreneurship, strategies for transforming technology into viable business ventures, sustainable management of research and development (R&D), market adoption and technology diffusion, open innovation and technology transfer, as well as market research and new product development management. Additionally, students will delve into business models, product strategies, and brand management specifically tailored for sustainable markets.

References:
1. Trott, P. (2021). Innovation Management and New Product Development (6th edition). Pearson.
2. Roorda, N. (2021). Fundamentals of Sustainable Development (1st Edition). Routledge.
3. Desai, A., & Mital, A. (2021). Sustainable Product Design and Development (1st Edition). CRC Press.

SLG 63503 - Port Operations and Logistics
Pre-Requisite: Nil
Synopsis:
This course offers a comprehensive overview of the fundamental aspects of port operations and logistics, with a special focus on technology management. Students will gain an in-depth understanding of the critical components that drive the efficiency and effectiveness of modern ports, while exploring the role of technology in transforming port operations. The course is designed to cover key topics essential for those seeking to pursue careers in port management, shipping, logistics, or related fields, with a strong emphasis on integrating technological innovations.

References:
1. Jay Heizer, Barry Render and Chuck Munson. (2023). Operations management: sustainability and supply chain management. 14th edition. Pearson.
2. Talley.W.K. (2018). Port Economics. Routledge.

Additional References:
1. Geerling,H.,Kuipers.,B & Zundwijk,R (2017). Ports And Networks: Strategies, Operations & Perspectives,1st Edition. Routledge

SLG 63703 - Automotive Dealership
Pre-Requisite: Nil
Synopsis:
This course provides an in-depth exploration of the key aspects of managing automotive dealerships in the 21st century, emphasizing the dynamic interplay between traditional sales processes and modern customer relationship strategies. Students will gain a comprehensive understanding of how to effectively manage and optimize dealership operations, with a focus on performance, role perception, and employee satisfaction. The course also covers contemporary approaches to dealership compensation and incentive structures, essential for attracting and retaining top talent in today's competitive market.

References:

Steve Gates. (2023). The negotiation book : your definitive guide to successful negotiating / John Wiley & Sons.

Additional Reference:
Paul Nieuwenhuis, Peter Wells (2015) The Global Automotive Industry, Wiley

SLG 63103 - Quality Management System
Pre-Requisite: Nil
Synopsis:
This course is related to the study of quality management systems and the requirement which will guide an organisation to maintain quality. In-depth explanation of the elements in the requirement and the documentation process of quality management and the initial phase of the quality management system. The course will further explain the different audit processes and certification. It also describes in detail the other related standard based management systems.

References:
Tricker, Ray. (2019). Quality Management Systems: A Practical Guide to Standards Implementation, (1st Editions). Routledge.

Additional References:
Malia . W Grant (2024). The Basics of Quality Management Systems: Achieve Superior Standards: A Comprehensive Guide to Building Effective Quality Systems for Success (1st Edition). 979-8879564464

SLG 63203 - Electronic Manufacturing Services
Pre-Requisite: Nil
Synopsis:
This course covers the concept of electronics contract manufacturing in which the electronics component suppliers would provide the design, manufacture and testing services for OEM. It covers the local and international value chain of electronics products manufacturing. The course would discuss on current practices of EMS on non-traditional industries including consumer electronics, industrial and instrumentation; from design and Original Design Manufacturer (ODM) through assembly, test, delivery and logistics and customer service.

References:
Thomas L Floyd, David M. Buchla, Gary D. Snyder, Electronics Fundamentals: Circuits, Devices & Applications, 9th Edition, 2022

Additional Reference:
1. Thomas L. Landers et al., Electronics Manufacturing Processes, Prentice Hall. ISBN: 978-0131764705
2. Bernie Matisoff, Handbook of Electronics Manufacturing Engineering 3rd Edition, Springer, ISBN: 978-0412086113
3. Report on The Flexible Electronics Opportunity (2014) by The National Academies Press. https://doi.org/10.17226/18812.
4. Hwaiyu Geng, Semiconductor Manufacturing Handbook, 2nd Edition, 2018, McGraw Hill Education, ISBN: 978-1-25-958312-4

FACILITIES AND ETHICS IN LABORATORY WORK

TEACHING AND LEARNING FACILITIES

UniKL-MSI has always been progressive in acquiring and establishing educational infrastructure and facilities. It is in the main concerns of UniKL-MSI Management to facilitate proper numbers of classroom to enhance the teaching and learning. All of the classrooms were equipped with the LCD Projector System (LCD Projector & Screen). Furthermore, the classrooms were also equipped with the Wi-Fi Access Point and the students are able to access to internet with Log-in password that are published and displayed Log-in page on the web. Table 15.1 displays number of teaching and learning facilities available for classroom, lecture and teaching & learning activity. Briefly, there are three (3) lecture hall, one (1) multimedia room, 13 classrooms, five (5) computer room and one (1) library. In total, lecture halls, multimedia rooms and classrooms can accommodate at about 1400 students at one time.

Table 15.1 Summary of Teaching and Learning Facilities

No.	Tag	Room	Facilities available	Capacity (Students)
1	AD-013	Audio Visual Multimedia Room	Audio Video system	25
2	AD-012	Computer Room 1	Screen & LCD Projector, Computer set, Whiteboard	30
3	AD-011	Computer Room 2		30
4	AD-010	Computer Room 3		30
5	AD-009	Computer Room 4		30
6	AD-111	Computer Room 5		25
7	WSR 3.0	Computer Lab (CAM)		25
8	AD-101	Al-Hambra Library	TV, computer, etc.	100
9	AD -117	Multimedia Room 1	LCD projector & AV system	60
10	AD -114	Lecture Hall A	Big screen & LCD projector, PA system, Whiteboard	180
11	AD -115	Lecture Hall B		180
12	WSR 12.0	Lecture Hall C		80
13	AD-026	Classroom 1	LCD projector, Audio Video system, Whiteboard	25
14	AD-201	Classroom 2		50
15	AD-202	Classroom 3		50
16	AD-203	Classroom 4		30
17	AD-204	Classroom 5		30
18	AD-206	Classroom 6		40
19	AD-207	Classroom 7		40
20	AD-208	Classroom 8		30
21	AD-209	Classroom 9		40
22	AD-210	Classroom 10		60
23	AD-211	Classroom 11		30
24	AD-212	Classroom 12		50
25	AD-213	Classroom 13		60

LABORATORIES FACILITIES

The Institute provides sufficient laboratory facilities in the form of an integrated laboratory tailored for teaching and learning purposes. The lab courses teaching specifically to provide the required fundamental and basic skills in electrical engineering technology and automation. The laboratories are equipped with state-of-the-art mechanical, electronics, manufacturing and automotive facilities, and equipment that are relevant to it. Most of the engineering technology laboratories are located at the Workshop building, and the summary of the engineering technology laboratory and workshop facilities for the programme is shown in Table C15.2

Table C15.2: List of laboratory and workshop at workshop building and administration building.

No	Room No	Room Label	Max Capacity
1	WSL 1.0	Advance Metrology	25
2	WSL 2.0	Center of Excellence-Applied Electronics	15
3	WSL 3.0	Automotive Structure Lab	25
4	WSL 4.0	Basic Metrology Lab	25
5	WSL 5.0	Material Lab	25
6	WSL 6.0	Research Lab 1	4
7	WSL 7.0	Analogue Lab	25
8	WSL 8.0	Digital Electronic Lab	25
9	WSL 9.0	Basic Hydraulics	25
10	WSL 10.0	Advance Hydraulics	25
11	WSL 11.0	Advance Pneumatics	25
12	WSL 12.0	Basic Pneumatic	25
13	WSL 13.0	Robotics Lab	25
14	WSL 14.0	Autotronics 1	25
15	WSL 15.0	Autotronics 2	25
16	WSM 1.0	Conventional Machine Tool Workshop	25
17	WSM 2.0	CNC Machine Tool Workshop	25
18	WSM 3.0	CNC / Maintenance & Assembly Workshop	20
19	WSM 4.0	EDM Laboratory	20
20	WSM 4.1	Rapid Prototype Lab	10
21	WSM 5.0	Mould Manufacturing Workshop	25
22	WSM 5.1	Basic Fitting	25
23	WSM 5.2	Domestic Wiring Bay	25
24	WSM 6.0	Auto Power Train Lab	25
25	WSM 7.0	Auto Chassis Lab	25
26	WSR 1.0	Styling Lab 1	25
27	WSR 2.0	Styling Lab 2	25

No	Room No	Room Label	Max Capacity
28	WSR 3.0	Computer Lab (CAM)	25
29	WSR 5.0	Didactic CNC Lathe	25
30	WSR 6.0	Didactic CNC Milling	25
31	WSR 7.0	Flexible Manufacturing (FMS 1)	25
32	WSR 8.0	Flexible Manufacturing (FMS 2)	25
33	WSR 9.0	Research Lab 2	4
34	WSR 10.0	Programmable Logic Controller (PLC)	25
35	WSR 12.0	Lecture Hall C	80
36	WSR 13.0	Control System	25
37	WSR 14.0	Instrumentation	25
38	WSR 15.0	Electric Machine	25
39	WSR 16.0	Motor Control	25
40	WSR 17.0	Power Electronics	25
41	WSR 18.0	Microprocessor	25
42	WSR 19.0	General Electronics	25
43	CB-001	Engine Performance Lab	25
44	CB-004	Drawing Studio 1	25
45	CB-005	Drawing Studio 2	25
46	AD-012	Computer Room 1 (Programming)	30
47	AD-011	Computer Room 2 (CAD 2)	30
48	AD-010	Computer Room 3 (CAE)	30
49	AD-009	Computer Room 4 (CAD 1)	30
50	AD-111	Computer Room 5 (IT)	25
51	AD-022	Vibration Lab	25
52	AD-023	Fluid Mechanics Lab	25
53	AD-025	Thermal Science Lab	25
54	WW	Welding Workshop	25

OBJECTIVES OF LABORATORY WORK AND WORKSHOP

The faculty has developed laboratory work to enhance the understanding of the theory given during the lecture. The activities have been developed for the students so that it will not only provide better understanding of the concepts learned but also skills in handling the equipment and ability to solve the given problem. The laboratories are also utilised for research and consultation work for the public. Below are the objectives of the laboratory work:

a. To develop the interest of the students in engineering field by exposing them to the work procedure and equipment handling in solving engineering problem.
b. To relate the engineering theory by validating data obtained from the experiment.
c. To increase the tools-handling skill and understanding the concept taught during the lecture.
d. To simulate and analyse engineering problems that are based on the knowledge acquired in the lecture.
e. To build up teamwork among the students during laboratory and workshop activities.
f. To support the research activities.
g. To provide consultation work for other institutions or agencies.

WORK ETHICS

All students are bound to the University Regulation & Guideline while working in the laboratory. These guidelines are meant to provide safe working environment for the safety of equipment and building in the laboratory as well as to avoid accident.

The faculty has detailed out the regulations for working in laboratories as the working procedures is the fundamental aspect of laboratory activities. Students are required to follow these guidelines while they are in the laboratory or within the vicinity of the laboratory. The objectives of these guidelines are as follows: -

a. To create a secure, safe and conducive working environment during laboratory and practical works.
b. To guarantee the safety of the students and their environment.
c. To highly cultivate discipline culture among students.
d. To adapt professional working ethics.
e. To prolong the equipments' life span and to maintain it with proper use and procedures.
f. To prevent misuse of equipments and avoid inappropriate and unnecessary damage to the equipments.
g. To make sure the practical work session is efficient without undue interference.

UNIVERSITI KUALA LUMPUR

ACKNOWLEDGEMENT

Campus would like to extend gratitude and appreciation to those who have contributed to the success of Academic Handbook completion:

Ir. Dr. Mohd Nizam Bin Ahmad
Ts. Mohd Suyerdi Bin Omar
Ts. Dr. Mohd Norzaimi B. Che Ani
Shaifuladi Bin Shaharuddin
Ir. Ts. Prof. Dr. Ishak Bin Haji Abdul Azid
Dr. Faiza Binti Mohamed Nasir
Ts. Dr. Haris Fazilah Bin Hassan
Mohd Riduan Bin Ibrahim
Zuraidah Binti Md Noor
Azwan Huzaimi Bin Mazlan