UTHM
Universiti Tun Hussein Onn Malaysia

ACADEMIC PROFORMA

2026/2027



BACHELOR OF

ELECTRICAL ENGINEERING WITH HONOURS (BEV)



FACULTY OF
ELECTRICAL & ELECTRONIC ENGINEERING
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Universiti Tun Hussein Onn Malaysia
August 2026

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Foreword from Vice Chancellor



Assalammualaikum Warahmatullahi Wabarakatuh and greetings.

I would like to extend my warmest congratulations and a heartfelt welcome to all new students of Universiti Tun Hussein Onn Malaysia (UTHM).

Your decision to join UTHM marks the beginning of an important and meaningful journey. We are honoured by the trust you have placed in our university, and we are committed to supporting you throughout your studies.

At UTHM, education is not only about gaining knowledge and earning a qualification. We want you to develop the skills, values and confidence needed to face the challenges of a rapidly changing world. Our academic programmes are continuously improved to provide quality learning experiences, nurturing critical thinking, and prepare you to contribute to society and the nation.

UTHM also places strong emphasis on research and innovation. Through research, we seek to develop practical and sustainable solutions to economic, social and environmental challenges. As students, you will have opportunities to learn, explore new ideas and participate in activities that connect your knowledge with real-world needs.

Beyond the classroom, UTHM encourages students to engage with the community and work with different stakeholders. These experiences will help you develop leadership, teamwork, communication and problem-solving skills while allowing you to make a positive contribution to society.

We also believe that good governance, integrity, responsibility and ethical values are essential in building a strong and trusted university. These values guide the way we teach, conduct research, serve the community and manage the university.

Our vision is to build a sustainable and resilient future through quality education, impactful research, meaningful community engagement and responsible governance. We hope that your time at UTHM will not only help you achieve academic success but also shape you into responsible, capable and future-ready graduates.

Once again, I warmly welcome all of you to the UTHM family. Make the most of every opportunity, learn from your experiences, build meaningful relationships and enjoy your journey with us. I wish you every success in your studies and in all your future endeavours.

Welcome to UTHM, and I wish you a rewarding and memorable academic journey.
Thank you.

"With Wisdom, We Explore"

Best wishes.

PROFESSOR DR. MAS FAWZI BIN MOHD ALI
Vice-Chancellor
Universiti Tun Hussein Onn Malaysia

Foreword by The Deputy Vice Chancellor (Academic and International)



Assalamualaikum Warahmatullahi Wabarakatuh and Greetings,

Congratulations and a warm welcome to all new students who have chosen Universiti Tun Hussein Onn Malaysia (UTHM) as their destination for higher education in pursuit of academic excellence and personal development.

UTHM remains fully committed to providing a holistic, high-quality, and industry-relevant educational experience that meets current global challenges and future demands. I would also like to express my sincere appreciation to the Centre forAcademic Development and TVET (CAD), the faculties, and all parties involved in the publication of this programme proforma book. This publication serves not only as an important reference forstudents and stakeholders, but also reflects the university's commitment towards transparency, quality assurance, and effective academic programme delivery.

In line with the aspirations of the Ministry of Higher Education Malaysia and the university's direction towards becoming a Global Technopreneur University 2030 (GTU2030), UTHM continues to strengthen its position as a global technical university in sustainable technology and transportation. TVET-based education, flexible learning approaches, digitalisation initiatives, and strong industry collaboration remain the key pillars in producing competent, professional, and globally competitive graduates.

Alhamdulillah, UTHM has achieved numerous accomplishments and recognitions at both national and international levels. These include recognition in the QS World University Rankings, Times Higher Education (THE) Rankings, UI GreenMetric, and various ratings related to sustainability, research, and TVET education. UTHM has also been recognised as a UNESCO TVET Chair, a UNESCO-UNEVOC International Centre for TVET, and one of Malaysia's leading TVET institutions in transportation technology. These achievements reflect the university's continuous commitment to advancing technical education and impactful innovation.

Currently, UTHM offers more than 114 academic programmes across diploma, bachelor's degree, master's degree, and doctoral levels, all accredited by the Malaysian Qualifications Agency (MQA) and relevant professional bodies. Supported by qualified academic and professional staff, the university continues to strengthen its educational ecosystem through centres of excellence, teaching factories, industrial laboratories, research centres, and strategic international collaborations.

Beyond academic excellence, UTHM also provides a conducive and comprehensive campus environment to support students' holistic development. Modern facilities, sports complexes, libraries, residential colleges, and inclusive learning environments contribute significantly towards nurturing balanced and well-rounded graduates.

In conclusion, I sincerely hope that this programme proforma book will serve as a valuable guide for students in planning their academic journey. May all initiatives and efforts undertaken by UTHM continue to produce high-quality graduates who will contribute meaningfully to national development and global well-being.

Thank you.

PROFESSOR DR. AFANDI BIN AHMAD
Deputy Vice Chancellor (Academic and International)
Universiti Tun Hussein Onn Malaysia

Foreword by The Dean



Assalamualaikum Warahmatullahi Wabarakatuh and Greetings,

Congratulations and thank you for choosing the Faculty of Electrical and Electronic Engineering (FKEE), Universiti Tun Hussein Onn Malaysia (UTHM).

FKEE UTHM is one of the most well-equipped engineering faculties, providing cutting-edge teaching and research facilities. With over 1,400 students from Malaysia and other countries enrolled in our undergraduate and postgraduate programs, we are proud of our diverse and inclusive academic community.

Our faculty is supported by a dedicated team of more than 140 academic staff, more than 30 assistant engineers, and administrative personnel. All of our academic programs are accredited by the Malaysian Qualifications Agency (MQA) and the Engineering Accreditation Council (EAC), ensuring the highest educational standards.

Beyond classroom learning, FKEE offers valuable opportunities for upskilling through specialized training programs, as well as outbound mobility programs, allowing students to gain global exposure and enhance their educational experience. These initiatives are designed to help you develop both technical and personal skills that will benefit you in your future career.

Everyone at FKEE shares a common goal of making a positive difference in the world, inspired by the philosophies of "continuous learning and improvement" and "giving is the best communication." At FKEE, we not only focus on electrical and electronic engineering but also on shaping well-rounded individuals who will contribute meaningfully to society.

This booklet provides important information about the Bachelor of Electronic Engineering with Honours (BEJ) program and details the courses you will take throughout your studies. Remember, success is a journey, not a destination. During this journey, you will be surrounded by a conducive, positive, and dynamic environment.

Take advantage of this opportunity to utilize our modern laboratories, where you can develop practical skills and apply theoretical concepts.

In short, this is your journey and your chance. Give it your best shot, embrace the learning curve, and make the most of the opportunities available to you, including upskilling and outbound mobility programs.

On behalf of FKEE, I wish you all the success in your studies!

PROF. TS. DR. ASMARASHID BIN PONNIRAN
Dean
Faculty of Electrical and Electronic Engineering
Universiti Tun Hussein Onn Malaysia

Vision

To be a global technical university in sustainable technology and transportation

Mission

Provide technical solution for industry and community based on tauhidic paradigm

Education Philosophy of University

UTHM education and training, founded on the tauhidic paradigm, strive to produce competent, professional and entrepreneurial graduates, driven by advanced technologies for global development.

Logo of University

The logo of UTHM displays a proton, a book, a tiered mortar board (levels of learning), a book-rest and a shield.

Symbolism:

Red	Bravery
Blue	Collaboration
Silver	Quality/ Prestige
Book-rest	Knowledge
Proton	Science and Technology
Book	Knowledge
Mortar board	Levels of study
Circle	Resilient and related to global characteristics
Shield	Confidence

The whole concept of the logo represents UTHM as a learning institution that supports knowledge expansion and development at all levels of study in science and technology.

Blue represents the close relationship among UTHM community in ensuring successful and resilient implementations of the University programmes as well as its education and research activities that are carried out for the benefit of mankind.

Red symbolises the adventurous nature of UTHM in exploring new fields to establish itself as a leader in the applications of science and technology. Thus, this reflects the spirit and self-esteem of the UTHM community..

Chancellor



HIS ROYAL HIGHNESS
TUNKU ISMAIL IBNI SULTAN IBRAHIM
Tunku Mahkota Johor

Pro-Chancellor



Yang Amat Mulia Tunku Idris Iskandar Al-Haj Ibni Sultan Ibrahim

Tunku Temenggong Johor



Yang Berhormat Tan Sri Dato' Dr. Haji Azmi Bin Rohani

Setiausaha Kerajaan Johor

Board of Directors of University

Chairman

YBhg. Dato' Sri Ibrahim bin Ahmad

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Vice-Chancellor, Universiti Tun Hussein Onn Malaysia

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Ministry of Higher Education

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Deputy Under-Secretary,
(Sector of Tax Incentive & Sectoral) TSBC (GCS) Tax Division, Ministry of Finance Malaysia

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Advisor, Johor Islamic Religious Council

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Board Member, Universiti Tun Hussein Onn Malaysia

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Board Member, Universiti Tun Hussein Onn Malaysia

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Chief Executive Officer, Recove Group

YBrs. Encik Hasry bin Harun
Chief Executive Officer, Malaysia Rail Development Corporation

YBrs. Prof. Ir. Dr. Mohd. Amri bin Lajis
Professor, Universiti Tun Hussein Onn Malaysia

YBrs. Mohamad Irza bin Dahari @ Zahari
Administration and Diplomatic Officer, Department Of Higher Education

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Government Procurement Division, Ministry of Finance

Secretary

YBrs. Mr. Naim bin Maslan
Registrar/Chief Operating Officer (COO), Universiti Tun Hussein Onn Malaysia

Members of Senate

Chairman

YB. Prof. Dr. Mas Fawzi bin Mohd Ali
Vice Chancellor

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Deputy Vice Chancellor (Academic and International)

Prof. Ts. Dr. Rabiah Binti Ahmad
Deputy Vice Chancellor (Research and Innovation)

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Deputy Vice Chancellor (Student Affairs and Alumni)

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Provost UTHM, Pagoh Branch Campus

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Assistant Vice Chancellor / Chief Digital Officer (CDO) (Digital and Infrastructure)

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Dean, Centre for Graduate Studies

Dean, Faculty of Civil Engineering and Built Environment

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Dean, Faculty of Electrical and Electronic Engineering

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Dean, Faculty of Mechanical and Manufacturing Engineering

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Dean, Faculty of Technology Management and Business

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Dean, Faculty of Applied Science and Technology

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Dean, Faculty of Engineering Technology

Dr. Muhammad Faizal bin Ismail
Dean, Centre for Diploma Studies

Dean, Centre for General Studies and Co-curricular

Dean, Centre for Language Studies

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Dean, Johor Business School

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Director, Centre for Academic Development and TVET

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Director, Research Management Centre

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Director, Malaysia Research Institute for Vocational Education and Training

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Chairman, UTHM Council of Professors

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Innovation & Commercialisation Centre

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Institute for Integrated Engineering (I^2E)

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Director, Information Technology Centre

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Faculty of Electrical and Electronic Engineering

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Faculty of Electrical and Electronic Engineering

Prof. Dr. Hasan Zuhudi bin Abdullah
Faculty of Mechanical and Manufacturing Engineering

Prof. Dr. Ahmad Jais bin Alimin
Faculty of Mechanical and Manufacturing Engineering

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Faculty of Technology Management and Business

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Faculty of Engineering Technology

Prof. Ir. Dr. Chan Chee Ming
Faculty of Engineering Technology

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Registrar / Chief Operating Officer (COO) / Senate Secretary

Mr.Ismail bin Harun
Bursar / Chief Financial Officer (CFO)

Mdm. Siti Afifah binti Che Ismail
Chief Librarian

Mdm. Norliah Binti Yaakub
Legal Advisor

FACULTY OF ELECTRICAL AND ELECTRONIC ENGINEERING

Vision

To be a global technical university in sustainable technology and transportation.

Missi on

Provide technical solution for industry and community based on tauhidic paradigm.

Direction

UTHM as a Global Technoprenuer University 2030 (#GTU2030).

Motto

With Wisdom, We Explore.

Quality Policy

Universiti Tun Hussein Onn Malaysia is committed to offer high quality academic programmes grounded in Engineering, Science and Technology to meet the needs of its stakeholders through an outstanding quality management system in line with the ISO 9001: 2015.

FKEE Quality Objectives

FKEE staff is committed to carrying out their responsibilities to ensure that the quality objectives of the current year are achieved, monitored and reviewed in tandem with the vision and mission of the University.

1. To ensure that students enrollment exceeds the 90% target.
2. To ensure that international students enrollment exceeds 6% of the total current enrollment.
3. To ensure that new research grants exceed RM1.9 million per year.
4. To ensure that the university H-Index (SCOPUS) increases by 1 index value each year.
5. To ensure that Graduate Employability after 6 months of graduation exceeds 80%.
6. To ensure that any complaints related to the teaching and learning system or equipment are resolved within a period of not more than 6 months.

Faculty of Electrical and Electronic Engineering

Faculty Background

The Faculty of Electrical and Electronic Engineering (FKEE) was established on 1st May 2004. The Faculty consists of four departments namely:

1. Department of Electronic Engineering (JKEN)
2. Department of Electrical Engineering (JKEK)
3. Department of Graduate Studies (JPSS)
4. Department of Laboratory and Asset Management (JPMA)

The Faculty also has two Centre of Research (CoR) known as Advanced Telecommunication Research Center (ATRC) and Electric Vehicle Research Center (EVRec). There are two Centre of Excellence (CoE) at UTHM associated with the Faculty:

1 Research Center for Applied Electromagnetics (EMCenter)
2 Microelectronics & Nanotechnology Shamsuddin Research Centre (MiNT-SRC)

Currently, there are various focus groups that play pivotal roles towards research culture establishment in FKEE. The list includes the following:

1 Green and Sustainable Energy (GSEnergy)
2 Koordinasi Insulasi dan Voltan Tinggi (KVolt)
3 Power Electronics, Drives and Machines (PEDM)
4 Power Integration System (PI Sys)
5 Instrumentation and Sensing Technology (InSeT)
6 Mechatronic and Control Research Group (MCRG)
7 Group of Robotics Engineering and Technology (GREaT)
8 Computational Signal, Image and Intelligence (CSII)
9 Internet of Things (IoT)
10 Electronic and System Design (ESD)
11 Electroencephalogram and Human Potential (EEG)
12 BioMedical Engineering and Measurement System (BioMEMS)
13 VLSI and Embedded System Technology (VEST)
14 Advanced Medical Imaging and Optics (AdMedic)
15 Advanced Sensing Device and Technology (ASDT)
16 Optical Communication and Artificial Intelligence (OCAI)
17 RF and Microwave Devices (RFMD)
18 Wireless and Propagation (WaP)

The Faculty offers Undergraduate and Postgraduate programmes in both Electrical and Electronic Engineering. These programmes have been designed to cater all the stakeholders needs where the produced graduates are technically competent in their respective engineering field but also possess outstanding soft skills. The faculty offers the following programmes:

1 Bachelor of Electronic Engineering with Honours (BEJ)
2 Bachelor of Electronic Engineering (Robotics and Artificial Intelligence Systems) with Honours (BEA)
3 Bachelor of Electronic Engineering (Semiconductor and Integrated Circuit Design) with Honours (BES)
4 Bachelor of Electrical Engineering with Honours (BEV)
5 Master in Electrical Engineering (Coursework) (MEE)
6 Master in Electrical Engineering (Research) (KEE)
7 Master of Science in IoT (MET)
8 Doctor of Philosophy in Electrical Engineering (PEE)

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Quality Policy

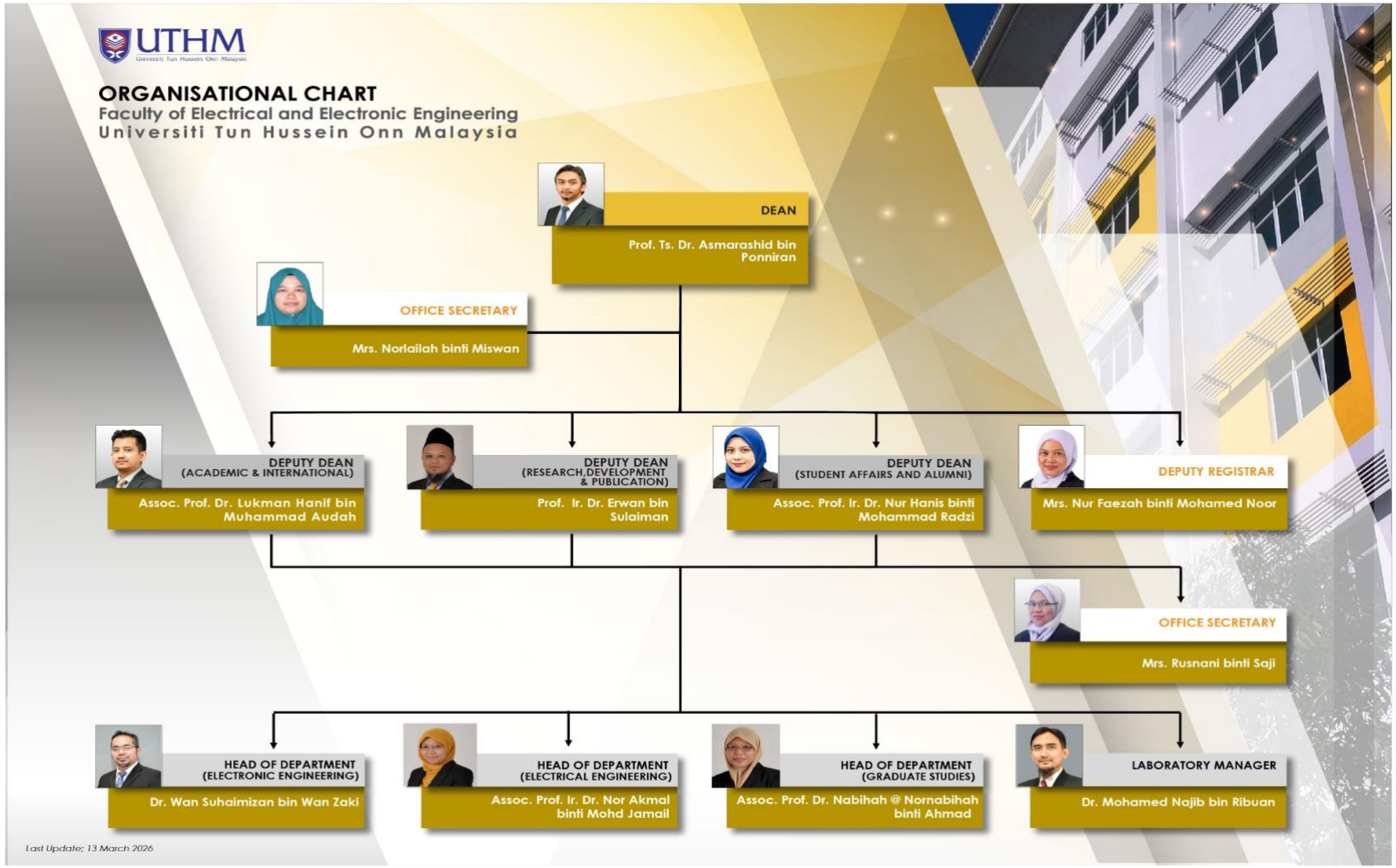
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6 To ensure that any complaints related to the teaching and learning system or equipment are resolved within a period of not more than 6 months)

ORGANIZATIONAL CHART



CERTIFICATE OF ACCREDITATION

BACHELOR OF ELECTRICAL ENGINEERING WITH HONOURS



No. Sijil: 1340
BEM/EAD/02-8/WA/03 (003)

LEMBAGA JURUTERA MALAYSIA

(Penandatangan Penuh Washington Accord mulai 18 Jun 2009)

SIJIL AKREDITASI

DENGAN INI MEMPERAKUKAN BAHAWA KURSUS PENGAJIAN

BACHELOR OF ELECTRICAL ENGINEERING
WITH HONOURS
(4-Year Programme after STPM)

YANG DIKENDALIKAN OLEH:

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

TELAH MENDAPAT PENGIKTIRAFAN RASMI BAHAWA KELAYAKAN AKADEMIK YANG DIANUGERAHKAN ADALAH SELARAS DENGAN STANDARD DAN KUALITI YANG TELAH DITETAPKAN OLEH LEMBAGA JURUTERA MALAYSIA

PERAKUAN BAGI TAHUN BERGRADUAT
2019 HINGGA 2024

DATO' SRI Ir. Dr. ROSLAN BIN MD TAHA
Yang Dipertua

Ir. HIZAMUL-DIN AB. RAHMAN
Pendaftar

Penganugerahan Perakuan Akreditasi ini tertakluk kepada peraturan-peraturan dan syarat-syarat yang dinyatakan di sebelah.

Tarikh Perakuan Dikeluarkan: 17.04.2019

EXTERNAL VISITORS

External Examiner



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Universiti Malaysia (UM)

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TRMS Engineering Sdn. Bhd.



Ir. Abd. Karim bin Abd Rahman
Petronas Technical Services Sdn. Bhd.

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BEng (Electrical) (KUiTTHO)

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Senior Administrative Assistant
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Ms. Nur Shahila binti Salim

Operational Assistant
Mr. Hasri Suhaimi bin Karmon

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BEng (Electrical) (UTM)

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BEng (Electrical) (UTM)

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PhD (Power Electronics) (Nagaoka University of Technology)
MEng (Electrical Power) (UTM)
BEng (Electrical) (KUiTTHO)

Associate Professor Ir. Dr. Dirman Hanafi bin Burhannuddin
PhD (Electrical Engineering) (UTM)
MEng (Instrumentation & Control) (Institut Teknologi Bandung)
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BEng (Electrical) (UTM)

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MEng (Electrical Power) (UTM)
BEng (Electrical) (UTM)

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MEng (Electrical Power) (UTM)
BEng (Mechatronic) (KUiTTHO)

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BEng (Electrical) (UiTM)

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MEng (Electrical Power Engineering) (UTeM)
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MEng (Microelectronic) (University of Newcastle Upon Tyne)
BEng (Electronic) (University of Electro-Communications)

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MEng (Electrical) (UTHM)
BEng (Electrical) (UTM)

Dr. Md Zarafi bin Ahmad
PhD (Electrical Engineering) (UTHM)
MEng (Electrical-Power) (UTM)
BEng (Electrical) (UiTM)

Dr. Mohd Aifaa bin Mohd Ariff
PhD (Electrical Engineering) (Imperial College London)
MEng (Electrical Power) (UTM)
BEng (Electrical) (UTM)

Dr. Nor Hafizah binti Ngajikin
PhD (Electrical Engineering) (UTM)
MEng (Electrical) (UTM)
BEng (Electrical - Telecommunication) (UTM)

Dr. Nordiana Azlin binti Othman
PhD (Electrical Engineering) (UTM)
BEng (Electrical) (UTM)

Dr. Roziah binti Aziz
PhD (Power Electronics, Drives and Machines) (Newcastle university)
MEng (Electrical) (UTHM)
BEng (Electrical) (UTM)

Dr. Suriana binti Salimin
PhD (Electrical Power Engineering) (Newcastle University)
MSc (Power Distribution Engineering) (University of Newcastle Upon Tyne)
BEng (Electrical) (UTM)

Ts. Dr. Syed Zahurul Islam
PhD (Electrical Engineering) (UPM)
MEng (Electrical) (UNITEN)
BEng (Computer Science and Engineering) (University of Dhaka)

Dr. Mimi Faisyalini Ramli
PhD (Electrical & Electronics Engineering) (University of Manchester)
MEng (Electrical & Electronic Engineering) (UTM)
BEng (Electrical & Electronic Engineering) (UTM)

Ts. Dr. Zuraidah Binti Ngadiron
PhD (Electrical Engineering) (UTHM)
M. Eng (Electrical Power Engineering) (UTHM)
B. Eng (Electrical Engineering – Communication (UTM)
Dip. (Electrical Engineering- Communication) (UTM)

Mdm. Rohaiza binti Hamdan
MEng (Electrical Power) (UTM)
BEng (Electrical Power) (UNITEN)

Mr. Suhaimi bin Saiman
MEng (Electrical Power) (UM)
BEng (Electrical and Electronic) (Leeds Metropolitan University)

Department of Electronic Engineering (JKEN)

Head of Department
Dr. Wan Suhaimizan bin Wan Zaki
PhD (Electrical and Electronic Engineering) (University of Nottingham)
MEng (Electronic Engineering) (UPM)
BEng (Medical Electronic) (UTM)

Specialisation Area: Communication Engineering (BEP)

Associate Professor Dr. Lukman Hanif bin Muhammad Audah
PhD (Electronic Engineering) (Univ. of Surrey)
MSc (Communications Networks & Software) (Univ. of Surrey)
BEng (Electrical - Telecommunication) (UTM)

Associate Professor Ir. Dr. Fauziahanim binti Che Seman
PhD (Electrical Engineering) (Queen's University of Belfast)
MEng (Electrical - Communication) (KUiTTHO)
BEng (Telecommunication) (UTM)

Associate Professor Dr. Khairun Nidzam bin Ramli
PhD (Electrical Engineering) (University of Bradford)
MEng (Communication & Computer Engineering) (UKM)
BEng (Electronic) (University of Manchester Institute. of Science & Technology)

Associate Professor Dr. Maisara binti Othman
PhD (Metro Access and Short Range Systems) (Technical University of Denmark)
MEng (Communication & Network) (UPM)
BEng (Computer & Communication System) (UPM)

Associate Professor Dr. Noran Azizan bin Cholan
PhD (Communication and Network Engineering) (UPM)
MEng (Electrical - Electronics and Telecommunications) (UTM)
BEng (Electronic) (UNITEN)

Associate Professor Dr. Zuhairiah binti Zainal Abidin
PhD (Communication Engineering) (University of Bradford)
MEng (Electrical) (KUiTTHO)
BEng (Electronic) (UTM)

Associate Professor Dr. Muhammad Ramlee bin Kamarudin
PhD (Electrical Engineering) (University of Birmingham)
MEng (Communication Engineering) (University of Birmingham)
BEng (Engineering) (UTM)

Associate Professor Dr. Samsul Haimi bin Dahlan
PhD (Signal and Telecommunication Engineering) (University of Rennes)
MEng (Electrical - Electronic and Telecommunication) (UTM)
BEng (Electrical) (UKM)

Associate Professor Dr. Syarfa' Zahirah binti Sapuan
PhD (Electrical Engineering) (UTHM)
MEng (Electrical & Electronic) (Nanyang Technology University)
BEng (Electrical) (KUiTTHO)

Associate Professor Dr. Xavier Ngu Toh Ik
PhD (Electrical Engineering) (University of Nottingham)
BEng (Electrical) (KUiTTHO)

Associate Professor Dr. Yee See Khee
PhD (Electrical Engineering) (UTHM)
MEng (Electrical) (UTHM)
BEng (Electrical) (KUiTTHO)

Dr. Abul Khair bin Anuar
PhD (Communication Systems) (Lancaster University)
MEng (Communication & Computer Engineering) (UKM)
BEng (Communication & Computer Engineering) (UKM)

Dr. Ansar bin Jamil
PhD (Electrical & Electronic Engineering) (Loughborough University)
MEng (Electrical - Electronics and Telecommunications) (UTM)
BEng (Electrical - Communication) (UTM)

Dr. Ariffuddin bin Joret
PhD (Electrical Engineering) (UTHM)
MEng (Electrical & Electronic) (USM)
BEng (Electrical) (UiTM)

Dr. Farhana binti Ahmad Po'ad
PhD (Communication System) (USM)
MEng (Electrical) (UTHM)
BEng (Electronic-Communication) (KUiTTHO)

Ts. Dr. Jong Siat Ling
PhD (Electrical Engineering) (UTM)
MEng (Electrical - Electronics and Telecommunications) (UTM)
BEng (Electrical - Telecommunication) (UTHM)

Dr. Mariyam Jamilah binti Homam
PhD (Electrical Engineering) (Univ. of Leicester)
MEng (Communication & Computer Engineering) (UKM)
BEng (Communication & Computer Engineering) (UKM)

Dr. Maslina binti Yaacob
PhD (Electrical Engineering) (UTM)
MEng Electrical) (UTM)
BEng (Electrical - Telecommunication) (UTM)

Dr. Norshidah binti Katiran
PhD (Electrical Engineering) (UTM)
MEng (Communication & Computer) (UKM)
BEng (Electrical - Telecommunication) (UTM)

Dr. Rahmat bin Talib
PhD (Electrical Engineering) (UTHM)
MEng (Electrical-Electronic and Telecommunication) (UTM)
BEng (Electrical, Electronics and System) (UKM)

Dr. Roshayati binti Yahya @ Atan
PhD (Electrical Engineering) (UTM)
MSc (Electrical - Electronic and Telecommunication) (UTM)
BEng (Electrical - Electronic and Telecommunication)
(KUiTTHO)

Dr. Saizalmursidi bin Md Mustam
PhD (Electrical Engineering) (UTM)
MEng (Electrical) (UTHM)
BEng (Electronic-Communication) (KUiTTHO)

Dr. Shaharil bin Mohd Shah
PhD (Electrical & Electronic Engineering) (University of Birmingham)
MSc (Microwave and Wireless Subsystems Design) (University of Surrey)
BEng (Electronic) (MMU)

Dr. Shipun Anuar bin Hamzah
PhD (Electrical Engineering) (UTM)
MEng (Computer & Communcation) (UKM)
BEng (Electrical) (UTM)

Dr. Siti Hajar Aminah binti Ali
PhD (Electrical & Electronic Engineering) (Kobe University)
MEng (Electrical - Electronics, and Telecommunications) (UTM)
BEng (Electrical-Telecommunications) (UTM)

Dr. Elfarizanis binti Baharudin
PhD (Wireless Communication Engineering) (UPM)
MEng (Commmunication and Computer) (UKM)
BEng (Electrical) (UiTM)

Mr. Aizan bin Ubin
MEng (Electrical) (KUiTTHO)
BEng (Electrical) (Univ. of Toledo, Ohio)

Mdm. Nurulhuda binti Ismail
MEng (Electrical) (UTHM)
BEng (Electrical) (UiTM)

Ts. Sharifah binti Saon
MEng (Electrical) (KUiTTHO)
BSc (Electrical) (KUiTTHO)

Specialisation Area: Computer Engineering (BEC)

Associate Professor Ir. Dr. Abd Kadir bin Mahamad
PhD (Electrical Engineering and Computer Science) (Kumamoto University)
MEng (Electrical) (KUiTTHO)
BEng (Computer Technology) (KUiTTHO)

Associate Professor Dr. Afandi bin Ahmad
PhD (Electronics & Computer Engineering) (Brunel University)
MSc (Microelectronic) (UKM)
BEng (Electrical) (KUiTTHO)

Associate Professor Ir. Dr. Siti Zarina binti Mohd. Muji
PhD (Electrical Engineering) (UTM)
MSc (Electrical & Electronic) (USM)
BEng (Electrical & Electronics) (USM)

Associate Professor Dr. Danial bin Md. Nor
PhD (Electrical Engineering) (UTHM)
MSc (Information Technology) (USM)
BEng (Electrical) (UTM)

Associate Professor Ir. Ts. Dr. Mohd Norzali bin Hj. Mohd
PhD (Information Sciences & Biomedical Engineering) (Kagoshima University)
MEng (Radiography) (University of Fukui)
BEng (Radiography) (University of Fukui)

Associate Professor Ir. Ts. Dr. Norfaiza binti Fuad
PhD (Electrical Engineering) (UiTM)
MEng (Computer and Communication System) (UPM)
BEng (Computer Engineering) (UTM)

Associate Professor Dr. Tay Kim Gaik
PhD (Mathematics) (UTM)
Master (Mathematics) (UTM)
Bachelor (Mathematics) (UTM)

Associate Professor Dr. Chessda Uttraphan a/l Eh Kan
PhD (Electrical Engineering) (UTM)
MEng (Electrical) (KUiTTHO)
BEng (Electrical) (UTM)

Associate Professor Dr. Nor Surayahani binti Suriani
PhD (Electrical, Electronic & System Engineering) (UKM)
MEng (Electrical – Electronics & Telecommunication) (UTM)
BEng (Computer Engineering) (UPM)

Dr. Chew Chang Choon
PhD (Computer Engineering) (Okayama University)
MEng (Electrical) (KUiTTHO)
BEng (Electrical) (UTM)

Dr. Chua King Lee
PhD (Electrical Engineering) (UTHM)
MSc (Microelectronic) (UKM)
BEng (Electrical) (KUiTTHO)

Ts. Dr. Khalid bin Isa
PhD (Computational Intelligence) (USM)
MEng (Computer and Communication System) (UPM)
BSc (Computer Science) (UTM)

Dr. Mohamad Hairol bin Jabbar
PhD (Nanoelectronic & Nanotechnology) (Universite de Grenoble)
MSc (Electrical and Electronic) (Liverpool John Moores University)
BEng (Electrical) (KUiTTHO)

Ts. Dr. Nan bin Mad Sahar
PhD (Electrical Engineering) (Okayama University)
MEng (System & Communication Engineering) (Okayama University)
BEng (Information & Computer Engineering) (Okayama University)

Dr. Nik Shahidah Afifi binti Md
Taujuddin PhD (Information Technology)
(UTHM) MSc (Computer Science) (UTM)

BEng (Computer Engineering) (UTM)

Dr. Radzi bin Ambar
PhD (Robotic) (Kyushu Institute of Technology)
MEng (Electrical) (UTHM)
BEng (Communication & Computer Engineering) (Toyohashi University of Technology)

Ts. Dr. Shamsul bin Mohamad
PhD (Computer Science) (UTM)
MSc (Computer Science) (USM)
BSc (Computer Science) (UTM)

Ts. Dr. Suhaila binti Sari
PhD (Science and Engineering) (Saitama University)
MSc (Electronic) (Yamagata University)
BEng (Electronic) (Yamagata University)

Dr. Tasiransurini binti Ab. Rahman
PhD (Electronic Engineering) (UMP)
MEng (Communication & Computer) (UKM)
BEng (Electrical) (KUiTTHO)

Mr. Mohd. Helmy bin Abd Wahab
MSc (Information Technology) (UUM)
BSc (Information Technology) (UUM)

Mdm. Munirah binti Ab Rahman
MEng (Electrical - Communication & Computer) (UKM)
BEng (Electrical) (KUiTTHO)

Mdm. Nor'aisah binti Sudin
MSc (Intelligent Knowledge Based System) (UUM)
BSc (Computer Science) (USM)

Mdm. Zarina binti Tukiran
MEng (Communication & Computer) (UKM)
BSc (Computer Science) (UTM)

Specialisation Area: Mechatronic and Robotic Engineering (BER)

Associate Professor Ts. Dr. Elmy Johana binti Mohamad
PhD (Electrical Engineering) (UTM)
MEng Electrical - Mechatronics) (UTM)
BEng (Electrical) (KUiTTHO)

Associate Professor Dr. Rosli bin Omar
PhD (Autonomous System) (University of Leicester)
MEng (Electrical) (UTM)
BEng (Electrical - Instrumentation & Control System) (UTM)

Associate Professor Ir. Dr. Tee Kian Sek
PhD (Mechatronics) (University of Leeds)
BEng (Electrical – Mechatronics) (UTM)

Associate Professor Ir. Ts. Dr. Mohd Razali bin Tomari
PhD (Computer Vision and Robotic) (Saitama University)

MSc (Intelligent System) (UPM)
BEng (Electrical– Mechatronic) (UTM)

Associate Professor Dr. Jamaludin bin Jalani
PhD (Robotic)(University of Bristol)
MSc (Mechatronic) (UIAM)
BEng (Electrical and Electronic) (UTM)

Associate Professor Ir. Dr. Chia Kim Seng
PhD (Electrical Engineering) (UTM)
BEng (Electrical – Instrumentation & Control) (UTM)

Associate Professor Dr. Abu Ubaidah bin Shamsudin
PhD (Robotics) (Tohoku University)
MEng (Mechatronic) (UIA)
BEng (Electrical & Electronic) (UTHM)

Associate Professor Dr. Herdawatie binti Abdul Kadir
PhD (Control and Robotic) (USM)
MEng (Electrical - Mechatronic) (UTM)
BEng (Electrical) (UTM)

Ts. Dr. Ain binti Nazari
PhD (Electrical, Electronic and System Engineering) (UKM)
MEng (Electrical – Mechatronics & Automatic Control) (UTM)
BEng (Electrical) (UTHM)

Ir. Dr. Budiman Azzali bin Basir
PhD (Control System and Digital Electronics) (UTM)
MEng (Mechatronic Engineering) (UTM)
BEng (Mechatronic Engineering) (UTM)

Dr. Hisyam bin Abdul Rahman
PhD (Electrical Engineering) (UTM)
BEng (Electrical - Mechatronic) (UTM)

Dr. Mohamed Najib bin Ribuan
PhD (Mechatronics) (Okayama University)
MSc (Mechatronics) (Newcastle University)
BEng (Electrical– Mechatronics) (UTM)

Ts. Dr. Mohammad Afif bin Ayob
PhD (Electrical Engineering) (UTHM)
MEng (Electrical) (UTHM)
BEng (Electrical) (UTHM)

Dr. Mohd Fadzli bin Abd Shaib
PhD (Electrical Engineering) (UTM)
MEng (Electrical) (UTM)
BEng (Electrical & Electronics) (UNITEN)

Dr. Mohd Hafiz bin A. Jalil @ Zainuddin
PhD (Electrical Engineering) (UiTM)
MEng (Electrical - Mechatronics) (UTM)
BEng (Electrical) (UiTM)

Dr. Noor Azizi bin Mardi
PhD (Control System Engineering) (RMIT University)

BEng (Aerospace Engineering) (University of Minnesota)

Ir. Dr. Noorhamizah binti Mohamed Nasir
PhD (Electrical Engineering) (UTHM)
MEng (Electrical) (UTHM)
BEng (Electrical) (UTHM)

Dr. Rafidah binti Ngadengon @ Ngadungon
PhD (Electrical Engineering) (UTM)
MEng (Mechatronics) (UTM)
BEng (Communication) (Kitami Institute of Technology)

Dr. Rohaida binti Mat Akir
PhD (Electrical and Electronic Engineering) (UKM)
MEng (Electrical - Electronic and Telecommunication) (UTM)
BEng (Electrical - Telecommunication) (UTM)

Ts. Mohamad Fauzi bin Zakaria
MEng (Control & Automation) (UPM)
BEng (Electrical) (UTM)

Ts. Reza Ezuan bin Samin
MEng (Electrical) (UTHM)
BEng (Electronics) (USM)

Specialisation Area: Microelectronic Engineering (BEM)

Professor Ts. Dr. Mohd Khairul bin Ahmad
PhD Engineering (Electronic) (Shizuoka University)
MEng (Electrical) (UiTM)
BEng (Electronic) (Gunma University)

Professor Dr. Nafarizal bin Nayan
PhD Engineering (Electrical Engineering) (Nagoya University)
MEng (Electronic) (Nagoya University)
BEng (Electrical and Electronic) (Nagoya University)

Associate Professor Dr. Fariza binti Mohamad
PhD Engineering (Functional Materials Engineering) (Toyohashi University of Technology)
MEng (Electrical & Electronic) (Toyohashi University of Technology)
BEng (Electrical & Electronic) (Toyohashi University of Technology)

Associate Professor Dr. Marlia binti Morsin
PhD (Micro Engineering & Nano Electronic) (UKM)
MEng (Electrical) (KUiTTHO)
BEng (Computer Engineering) (UTM)

Dr. Intan Sue Liana binti Abdul Hamid
PhD (Microelectromechanical) (USM)
MEng (Electrical) (UTHM)
BEng (Microelectronic) (UKM)

Dr. Jais bin Lias
PhD (Electronic Engineering) (Nagaoka University of Technology)
MEng (Electrical, Electronic & Information Engineering) (Nagaoka University of Technology)
BEng (Electrical & Electronic) (Tottori University)

Dr. Muhammad Anas bin Razali
PhD (Electronic Engineering) (University of Surrey)
MSc (Electrical and Electronic) (University of Surrey)
BSc (Electrical and Electronic) (UTM)

Dr. Nabihah@Nornabihah binti Ahmad
PhD (Electronic Engineering) (Massey University)
MEng (Electrical) (KUiTTHO)
BEng (Electrical and Electronic) (UKM)

Ts. Dr. Nurfarina binti Zainal
PhD (Electrical & Electronic Engineering) (Queen's University Belfast)
BEng (Electrical and Electronic) (Swansea University)

Dr. Rahmat bin Sanudin
PhD (Electronic Engineering) (University of Edinburgh)
MEng (Electrical - Electronics and Telecommunications) (UTM)
BEng (Electrical and Electronic) (UNITEN)

Dr. Riyaz Ahmad bin Mohamed Ali
PhD (Medical Biosensor) (Osaka University)
MEng (Electrical) (UTHM)
BEng (Electrical) (UTHM)

Dr. Warsuzarina binti Mat Jubadi
PhD (Electrical and Electronic Engineering) (University of Manchester)
MEng (Electrical - Electronics and Telecommunications) (UTM)
BEng (Electrical and Electronic) (UTM)

Mdm. Rosnah binti Mohd Zain
MEng (Electrical) (KUiTTHO)
BEng (Electrical) (UTM)

Specialisation Area: Medical Electronic Engineering (BEU)

Professor Ts. Dr. Muhammad Mahadi bin Abdul Jamil
PhD (Electronic Engineering - Medical) (University of Bradford)
BEng (Medical Engineering) (University of Bradford)

Associate Professor Ir. Dr. Audrey Huong Kah Ching
PhD (Biomedical Optics and Imaging) (University of Nottingham)
BEng (Medical Electronic) (KUiTTHO)

Associate Professor Ir. Dr. Nabilah binti Ibrahim
PhD Engineering (Electronic) (Tohoku University)
MEng (Electrical and Computer Science) (Shibaura Institute of Technology)
BEng (Electrical - Communication) (Shibaura Institute of Technology)

Associate Professor Ir. Dr. Soon Chin Fhong
PhD (Molecular & Biomedical Engineering) (University of Bradford)
MEng (Electrical) (ITTHO)
BEng (Medical Electronics) (ITTHO)

Associate Professor Dr. Nur Anida binti Jumadi
PhD (Electrical & Electronic Engineering) (UKM)
MSc (Electrical) (Queen Mary University of London)

BEng (Electrical) (KUiTTHO)

Associate Professor Dr. Nurmiza binti Othman
PhD (Electrical and Electronic Engineering) (Kyushu University)
MEng (Electrical and Electronic) (Utsunomiya University)
BEng (Electrical and Electronic) (Utsunomiya University)

Ir. Dr. Farhanahani binti Mahmud
PhD Engineering (Biomechanical Science & Bioengineering) (Osaka University)
BEng (Electric & Electronic Engineering) (Toyama University)

Dr. Ashok Vajravelu
PhD (Medical Electronic) (Anna University)
MEng (Process Control and Instrumentation) (Annamalai University)
BEng (Electronics and Communication) (Bharathiar University)

Dr. Ida Laila binti Ahmad
PhD (Electrical Engineering) (UTM)
MEng (Electrical – Electronic and Telecommunication) (UTM)
BEng (Electronic) (MMU)

Dr. Mohamad Nazib bin Adon
PhD (Electrical Engineering) (UTHM)
MEng (Electrical - Electronic and Telecommunication) (UTM)
BEng (Electrical) (UTM)

Ts. Dr. Muhammad Hazli bin Hj. Mazlan
PhD (Biomedical Engineering–Biomechanical) (Kyushu University)
MEng (Biomedical) (UM)
BEng (Electrical) (KUiTTHO)

Dr. Nur Ilyani binti Ramli
PhD (Electronic Engineering - Medical) (University of Bradford)
BEng (Electrical and Electronic) (Leeds Metropolitan University)

Dr. Wan Mahani Hafizah binti Wan Mahmud
PhD (Biomedical Engineering) (UTM)
BEng (Biomedical Engineering) (UTM)

Dr. Wan Suhaimizan bin Wan Zaki
Phd (Electrical and Electronic Engineering) (Nottingham University)
MEng (Electronic) (UPM)
BEng (Medical Electronic) (UTM)

Ms. Masnani binti Mohamed
MEng (Electrical) (UTM)
BEng (Electrical) (UiTM)

Department of Laboratory and Asset Management (JPMA)

Laboratory Manager
Dr. Mohamed Najib Bin Ribuan
PhD (Mechatronic) (Okayama University, Japan)
MSc (Mechatronic) (Newcastle University, UK)
BEng (Electrical-Mechatronic) (UTM)

Mr. Nik Mohd Asri bin Nik Ismail
MEng (Electrical) (UTHM)
BEng (Electrical) (UiTM)

Mr. Ezri bin Mohd
MEng (Electrical) (UTHM)
BEng (Telecommunication) (UTM)

Mr. Mohd Jais bin Che Soh
BEng (Electrical) (UM)

Ts. Muhammad Nafis bin Ismail
BEng (Electrical) (UTM)

Ts. Wan Nur Hafsha binti Wan Kairuddin
MEng (Electrical) (UTHM)
BEng (Electronic) (USM)

Mr. Abdul Hamid bin Sabran
Cert. (Electronic Engineering (Communication)) (Poli. Kota Bharu)

Mr. Aidi bin Basar
Dip. (Electrical Engineering) (Poli. Merlimau)
Cert. (Electrical Engineering) (Poli. JB)

Mr. Ayoub bin Kasno
Cert. (Electronic & Computer Technology) (Poli. Ungku Omar)

Mr. Hairul Nizam bin Tukimin
Cert. (Electronic Engineering) (Poli. Johor Bahru)

Mr. Jamallullail bin Ibrahim
Cert. (Electrical Engineering) (Poli. Sultan Hj. Ahmad Shah)

Mr. K. Kovalan A/L Kanawathi
Dip. (Electronic Engineering) (Poli. KB)
Cert. (Electrical & Electronic Engineering) (Poli. JB)

Mr. M. Nazeri bin Sarmijan
Dip. (Electrical Engineering) (Poli. PD)
Cert. (Electrical Power) (Poli. Sultan Hj. Ahmad Shah)

Mr. Mahmod bin Munajat
Cert. (Electronic Communication Engineering) (Poli. Johor Bahru)

Mr. Maslan bin Ahmad
Cert. (Electronic Communication) (Poli. KB)

En. Mustaffa bin Ahmad
Dip (Electrical & Electronic Engineering) (Poli. Ungku Omar)

Mr. Md Hapic bin Mohamad
Cert. (Electronic Communication) (Poli. Sultan Hj, Ahmad Shah)

Mr. Md. Rabani bin Adnan
Dip. (Electrical Engineering (Communication)) (UTM)

Mr. Md. Zaihan bin Md. Lajis
Cert. (Electrical Power) (Poli. Sultan Abdul Halim Muadzam Shah)

Mr. Mohamad Fauzi bin Mustaffa
Cert. (Electronic Communication) (Poli. PD)

Mr. Mohd. Azrul bin Tugiman
Cert. (Electrical Power) (Poli. Sultan Abdul Halim Muadzam Shah)

Mr. Mohd Shahidan bin Madiah
Cert. (Electronic Engineering (Control)) (Poli. JB)

Mr. Mohd Shamsuddin bin Muslim
Cert. (Electrical Power) (Poli. PD)

Mr. Mohd Zaki bin Zakaria
Cert. (Electrical & Electronics Engineering) (Poli. JB)

Mr. Muhammad Haziq Azwan Bin Reduan
Dip. (Electronics & Communication Engineering) (Poli. Ibrahim Sultan)

Mdm. Nafizah binti Salleh @ Ali
Cert. (Electronic & Computer Technology) (Poli. Ungku Omar)

Mdm. Nooreis Shadila binti Jarkasi
Dip. (Electronic Engineering (Computer)) (Poli. Seberang Perai)
Cert. (Electrical & Electronics Engineering) (Poli. Johor Bahru)

Mr. Norazizi bin Hamisan
Dip (Electronic Engineering) (Poli. Johor Bahru)
Cert (Electrical Engineering) (Poli Port Dickson)

Mdm. Nurain binti Azizul
Cert. (Electrical and Electronic Engineering) (Poli. Port Dickson)

Mdm. Nurul Aqla binti Abdul Razak
Dip. (Electrical & Electronic Engineering) (Poli. JB)
Cert. (Electrical & Electronics Engineering) (Poli. JB)

Mr. Ramlan bin Ralim
Dip. (Electronics Communication Engineering) (Poli.Sultan Hj. Ahmad Shah)
Cert. (Electronics Communication Engineering) (Poli.Sultan Hj. Ahmad Shah)

Mr. Rosley bin Sawarno
Cert. (Electronics Control) (PSA)

Mr. Sahalan bin Yasin
Cert. (Electronic Communication Engineering) (Poli. Sultan Hj. Ahmad Shah)

Mr. Sharifunazri bin Johari
Cert. (Electronic Communication) (Poli.Sultan Hj. Ahmad Shah)

Mdm. Siti Ruslina binti Mohamad Rusli
Dip. (Electronics Engineering) (UiTM)

Mdm. Suhaini binti Tunan
Cert. (Electrical Power) (Poli. PD)

Mr. Syafiq Afiq bin Sulaiman
Cert. (Electrical Engineering) (Poli. JB)

Mr. Uzli bin Yusof
Cert. (Electronic Engineering (Communication)) (Poli.Sultan Hj. Ahmad Shah)

Mdm. Wan Nor Azliza binti Wan Abdullah
Dip. (Electronic Engineering (Computer)) (Poli.Sultan Hj. Ahmad Shah)
Cert. (Electronic Engineering (Control)) (Poli. JB)

Mdm. Junaidah binti Azlan
Sijil Pelajaran Malaysia (SPM)

Mdm. Wasnita binti Hamsan
Sijil Pelajaran Malaysia (SPM)

PROGRAMME INFORMATION

BACHELOR OF ELECTRICAL ENGINEERING WITH HONOURS (BEV)

About the Programme

Bachelor of Electrical Engineering with Honours (BEV) focuses on students' development in order to produce engineers with attributes outlined by International Engineering Alliance (IEA). The deliveries and assessments are adopting Student-Centered Learning (SCL) approaches, such as Problem-Based Learning (PBL) and Project-Oriented Problem-Based Learning (POPBL). Apart from that, students in BEV programme are also trained to solve complex engineering problems, as well as engaged in complex engineering activities. The graduates of BEV programme are expected to be competent in the field of electrical engineering to fulfill the needs of industries. Upon graduation, BEV graduates will be able to register with Board of Engineers Malaysia (BEM) under 'Electrical' branch. This will entitle them to work as electrical engineers, be it in Malaysia or abroad. After minimum of three (3) years working as engineers, they are able to apply as Professional Engineers through BEM, and their career paths can be further extended to become Competent Engineers and Competent Service Engineers through Energy Commission (EC) Malaysia.

Programme Structure and Assessment

This program consists of 135 credits to be completed within eight (8) semesters. Assessment of students' performance is based on formative and summative evaluation conducted throughout each semester. The short semester in Year 3 is occupied for industrial training.

Duration and Award

Duration : Full Time – Four (4) Years. Intake in October and March
Awards : Bachelor of Electrical Engineering with Honours

Course Outline:

This program consists of the following courses:

Year 1 (Semester 1 & 2)

Occupational Safety and Health, Calculus, Computer Programming, Electric Circuit I, Digital electronics, Analog Electronics, Electric Circuit II, Ordinary Differential Equations

Year 2 (Semester 3 & 4)

Electrical Engineering Laboratory I, Polyphase Circuit, Transform Circuit, Electrical Measurement and Instrumentation, Multivariable Calculus, Creativity and Innovation, Electrical Engineering Laboratory II, Electrical Machines, Power System Analysis, Electromagnetics Fields and Waves, Numerical Method, Engineering Economic & Entrepreneurship.

Year 3 (Semester 5 & 6)

Power Engineering Laboratory I, Power Generation, Transmission and Distribution, Power Electronics, Electronics Communication Systems, Mechanical Sciences, Engineering Statistic, Engineering Management, Power Engineering Laboratory II, Utilisation of Electrical Energy, Electrical Drives, Digital Signal Processing, Control Systems, Engineer and Society.

Year 3 (Short Semester - 10 Weeks)

Industrial Training

Year 4 (Semester 7 & 8)

Power Engineering Laboratory III, Industrial Power Systems, Power System Protection, Final Year Project I, Integrated Design Project, Elective Course, Power Quality, Final Year Project II, Power Engineering Laboratory IV, High Voltage Engineering.

Professional Accreditation

This program is recognized by the Public Service Department of Malaysia and accredited by the Malaysian Qualification Agencies (MQA) and Engineering Accreditation Council (EAC).

Career Opportunities

Electrical Engineer, Protection Engineer, Power Quality Engineer, Renewable Energy Engineer, Power System Engineer, Plant Engineer, Design Engineer, Project Engineer, Production Engineer, Competent Electrical Engineer, Electrical Service Engineer, Project Manager, Electrical Consultant, Energy Manager, Electrical Engineering Lecturer.

Nevertheless, the room for continuing studies is always available. It is also worthwile to continue education that will open up more opportunities and boost career prospects. Graduates may pursue higher degrees by research (MEng, PhD, etc), or by taught postgraduate programmes (MSc, MEng, MBA, etc.).

Commencement of Study

Twice a year in October and March

Contact Us

Website directory UTHM: https://uthm.edu.my/
Website directory FKEE: https://fkee.uthm.edu.my/

Regarding Bachelor of Electrical Engineering with Honours Programme (BEV)
Associate Professor Ir. Dr. Norakmal binti Mohd Jamail
☎ +607 - 456 4509

✉ mnoor@uthm.edu.my

BACHELOR OF ELECTRICAL ENGINEERING WITH HONOURS (BEV)

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1 Able to build a career and become a leader in engineering fields

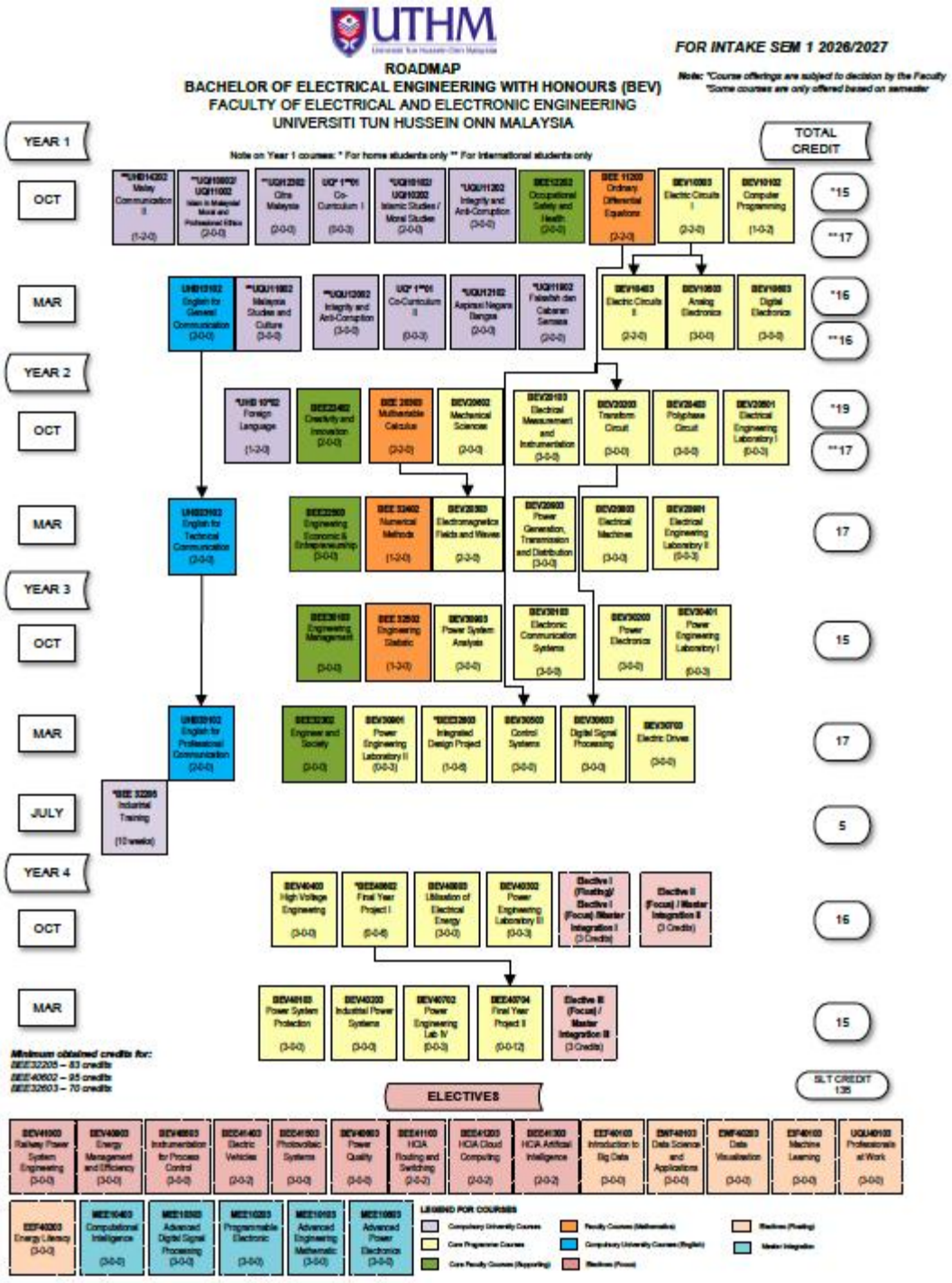
PEO 2 Recognised as competent engineering professionals in providing technical solutions locally or globally.

PEO 3 Contribute to society with consideration for environment and sustainable technology.

PROGRAMME LEARNING OUTCOMES (PLO)

PLO	Domain	PLO Statement
1	Engineering Knowledge (EAC 1)	Apply knowledge of mathematics, natural science, computing and engineering fundamentals, and an engineering specialization as specified in WK1 to WK4 respectively to develop solutions to complex engineering problems
2	Problem Analysis (EAC 2)	Identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences with holistic considerations for sustainable development (WK1 to WK4)
3	Design/Development of Solutions (EAC 3)	Design solutions for complex 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 as required (WK5).
4	Investigation (EAC 4)	Conduct investigation of complex engineering problems using research methods including research-based knowledge, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions (WK8)
5	Modern Tool Usage (EAC 5)	Create, select and apply, and recognize limitation of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems, (WK2 and WK6).
6	The Engineer and the World (EAC 6)	Analyze and evaluate sustainable development impacts to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving complex engineering problems (WK1, WK5, and WK7)
7	Ethics (EAC 7)	Apply ethical principles and commit to professional ethics and norms of engineering practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion (WK9).
8	Individual & Collaborative Team Work (EAC 8)	Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multidisciplinary, face-to-face, remote and distributed settings (WK9)
9	Communication (EAC 9)	Communicate effectively and inclusively 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, taking into account cultural, language, and learning differences.
10	Project Management and Finance (EAC 10)	Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects in multidisciplinary environments
11	Life Long Learning (EAC 11)	Recognise the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change (WK8)

ROADMAP
BACHELOR OF ELECTRICAL ENGINEERING WITH HONOURS



STUDY PLAN
BACHELOR OF ELECTRICAL ENGINEERING WITH HONOURS (BEV)

YEAR 1

Sem	Course Code	Course Name	Credit
1	UQI10102	*Islamic Studies (local muslim)	2
	UQI10202	*Moral Studies (local non-muslim)	2
	UQI10902	**Islam in Malaysia (int-muslim))	2
	UQI11002	**Moral and Professional Ethics (int -non-muslim)	2
	UQU11202	*Integrity and Anti-Corruption (local)	2
	UHB14202	**Malay Language (international)	2
	UQ*1xxx1	Co-Curriculum I	1
	BEE12202	Occupational Safety and Health	2
	BEE11203	Ordinary Differential Equations	3
	BEV10102	Computer Programming	2
	BEV10303	Electric Circuits I	3
	Total		**15*/17****

Sem	Course Code	Course Name	Credit
2	UHB13102	English for General Communication	2
	UQU12102	*Aspirasi Negara Bangsa (Local)	2
	UQI11902	*Philosophy and Current Issues (Local)	2
	UQU11802	**Malaysia Studies and Culture (International)	2
	UQU12002	**Integrity and Anti-Corruption (International)	1
	UQ*1XXX1	Co-Curriculum I	1
	BEV10403	Electric Circuits II	3
	BEV10503	Analog Electronics	3
	BEV10603	Digital Electronics	3
	Total		**16*/16****

**for home students only, ** for international students only*

YEAR 2

Sem	Course Code	Course Name	Credit
3	UHB1XX02	*Foreign Language (local)	2
	BEE20303	Multivariable Calculus	3
	BEE22402	Creativity and Innovation	2
	BEV20103	Electrical Measurement and Instrumentation	3
	BEV20203	Transform Circuit	3
	BEV20403	Polyphase Circuit	3
	BEV20501	Electrical Engineering Laboratory I	1
	BEV20602	Mechanical Sciences	2
	Total		**19**

Sem	Course Code	Course Name	Credit
4	UHB23102	English for Technical Communication	2
	BEE22503	Engineering Economic and Entrepreneurship	3
	BEE32402	Numerical Methods	2
	BEV20303	Electromagnetic Fields and Waves	3
	BEV20903	Power Generation, Transmission and Distribution	3
	BEV20803	Electrical Machines	3
	BEV20901	Electrical Engineering Laboratory II	1
	Total		**17**

STUDY PLAN

BACHELOR OF ELECTRICAL ENGINEERING WITH HONOURS

YEAR 3

Sem	Course Code	Course Name	Credit
5	BEE30103	Engineering Management	3
	BEE32502	Engineering Statistics	2
	BEV30103	Electronic Communication Systems	3
	BEV30203	Power Electronics	3
	BEV30903	Power System Analysis	3
	BEV30401	Power Engineering Laboratory I	1
	Total		**15**

Sem	Course Code	Course Name	Credit
6	UHB33102	English for Professional Communication	2
	BEE32302	Engineers and Society	2
	BEV30503	Control Systems	3
	BEV30603	Digital Signal Processing	3
	BEV30703	Electric Drives	3
	BEE32603	Integrated Design Project	3
	BEV30901	Power Engineering Laboratory II	1
	Total		**17**

Sem	Course Code	Course Name	Credit
7	BEE32205	Industrial Training	5
	Total		**5**

YEAR 4

Sem	Course Code	Course Name	Credit
8	BEE40602	Final Year Project I	2
	BEV40803	Utilisation of Electrical Energy	3
	XXXxxxx3	Elective I* (Floating/Focus/Master Integration)	3
	BEV40403	High Voltage Engineering	3
	BEV40302	Power Engineering Laboratory III	2
	XXXxxxx3	Elective II* (Focus/Master Integration)	3
	Total		**16**

Sem	Course Code	Course Name	Credit
9	BEE40704	Final Year Project II	4
	BEV40203	Industrial Power Systems	3
	XXXxxxx3	Elective III* (Floating/Focus/Master Integration)	3
	BEV40702	Power Engineering Laboratory IV	2
	BEV40103	Power System Protection	3
	Total		**15**

Total Credit	**135**

*ELECTIVE COURSES/ MASTER INTEGRATION COURSES = 9 CREDITS (3 COURSES)

Elective	Course Code	Course Name	Credit
Focus (Min 2 Max 3)	BEV41003	Railway Power System Engineering	3
	BEV40903	Energy Management and Efficiency	3
	BEV40603	Power Quality	3
	BEV40503	Instrumentation for Process Control	3
	BEE41503	Photovoltaic Systems	3
	BEE41403	Electric Vehicles	3
	BEE41303	HCIA Artifical Intelligence	3
	BEE41203	HCIA Cloud Computing	3
	BEE41103	HCIA Routing and Switching	3
Floating (Max 1)	UQU40103	Professional at Work	3
	EWF40203	Data Visualisation	3
	EWF40103	Data Science and Applications	3
	EIF40103	Machine Learning	3
	BEE40903	Introduction to Big Data	3
	EEF40203	Energy Literacy	3
Master Integration ; 3 Courses)	MEE10603	Advanced Power Electronics	3
	MEE10403	Computational Intelligence	3
	MEE10303	Advanced Digital Signal Processing	3
	MEE10203	Programmable Electronic	3
	MEE10103	Advanced Engineering Mathematic	3

SYNOPSIS OF UNIVERSITY COURSES

UHB13102 English for General Communication

Synopsis:
This course aims to develop students' existing English Language skills so they will be able to communicate better in their current higher education setting. Through guided and independent learning activities, students will develop their skills in reading, listening, writing and speaking. At the end of the course, students should be able to recognize relevant information in texts on topics of interest and students should also be able to write on familiar topics. Furthermore, this course will provide students with opportunities to enhance their listening and speaking skills.

References:

1. Council of Europe (2023). Common European Framework of Reference for Languages: Learning, Teaching, Assessment – Companion Volume. Retrieved from https://rm.coe.int/common-european-framework-of-reference-for-languages-learning-teaching/16809ea0d4
2. Cambridge University Press (2023). English Grammar in Use: A Self-study Reference and Practice Book for Intermediate Learners of English.Retrieved from https://www.cambridge.org/elt/resources/grammar-in-use
3. Oxford University Press (2023). Oxford Learner's Dictionary of Academic English.Retrieved from https://www.oxfordlearnersdictionaries.com/
4. Cambridge Assessment English (2025). B1 Preliminary.Retrieved from https://www.cambridgeenglish.org/exams-and-tests/preliminary/
5. National Geographic Learning (2025). Pathways: Listening, Speaking, and Critical Thinking – Intermediate Level. Retrieved from https://www.eltngl.com/pathways
6. TESOL International Association (2025). TESOL Resource Center. Retrieved from https://www.tesol.org/resource-center/

UHB23102 English for Technical Communication

Synopsis:
This course introduces students to basic information of technical communication such as technical definition and description by using high degree of grammatical control. At this level, students will be exposed to the different types of proposal writing. In addition, students will also learn about the components of technical documents. Finally, students are also expected to execute and present an event.

Pre-requisite: A pass in English for General Communication

References:

1. Newby, P. (2014). Research methods for education. (2nd ed.). Abingdon: Routledge. LB1028.N48 2014.
2. Paige, W. (2015). The least you should know about English: Writing skills. Stamford, CT: Cengage Learning. PE1408 .G43 2015
3. Randall, V. (2015).The college writer: A guide to thinking, writing, and researching. Australia : Wadsworth. PE1408 .C64 2015
4. Sekaran, U. (2013). Research methods for business: A skillbuilding approach. (6th ed.). Chichester, West Sussex:Wiley. HD30.4.S44 2013.

UHB33102 Englis for Professional Communication

Synopsis:
This course equips students with the necessary English language skills to communicate effectively and professionally in workplace settings. It enhances students' written and oral communication through professional etiquette, structured meetings, and persuasive pitching techniques. Through practical exercises and real-world scenarios, students will develop confidence in writing professional documents, participating in meetings, and delivering impactful presentations. The course also emphasises interpersonal communication, active listening, and the ability to engage diverse audiences in professional contexts.

Pre-requisite: A pass in English for Technical Communication

References:

1. Challender, J. (Ed.). (2022). Professional ethics in construction and engineering. John Wiley & Sons Ltd. https://doi.org/10.1002/9781119832119
2. Glückler, J., Winch, C., et al. (2023). Professions and proficiency (1st ed.). Springer International Publishing AG. (Knowledge and Space Series)
3. Mullany, L., & Schnurr, S. (Eds.). (2022). Globalisation, geopolitics, and gender in professional communication. Routledge. [eBook]. Retrieved from eBook Collection (EBSCOhost).
4. Price, H., & McIntyre, D. (2023). Communicating linguistics: Language, community and public engagement (1st ed.). Taylor & Francis Group.
5. Räisänen, T., Hynninen, N., & Kankaanranta, A. (2022). English as a business lingua franca. In Reference module in social sciences. Elsevier. [eBook].Schauer, G. A. (2024). Intercultural competence and pragmatics. Palgrave Macmillan. https://doi.org/10.1007/978-3-031-44472-2

UHB11002 **Malay Communication I (Foreign student only)

Synopsis:

This course is designed for international students to communicate in basic Malay in daily situations. Students are exposed to speaking and writing in simple Malay. Teaching and learning will be delivered through lecture, tutorial, assignment and indoor or outdoor experiential learning. At the end of this course, student will be able to speak and write using simple sentences effectively.

References:

1. Yong, C. C., Rohaidah Mashudi, Maarof Abd Rahman. (2012). **Bahasa Kebangsaan untuk Pelajar Luar Negara: Malay Language for International Students**. Petaling Jaya: Pearson Malaysia.
2. Zarina Othman, Roosfa Hashim & Rusdi Abdullah. (2012). **Modul Komunikasi Bahasa Melayu Antarabangsa**, KPT. Penerbit UKM Press.

UHB1XX02 Foreign Language

Synopsis:

Students will need to register only ONE (1) foreign language course throughout their study. Wide selection is available such as Mandarin, Spanish, Japanese, Arabic, German and French.

***All courses related to English and Foreign Language are conducted by Centre for Language Studies (CLS, UTHM). Kindly visit their website or contact for more information.*

UQI11202 Philosophy and Current Issues

Synopsis:

Kursus merangkumi hubungan ilmu falsafah dengan Falsafah Pendidikan Kebangsaan dan Rukunegara. Penggunaan falsafah sebagai alat untuk memurnikan budaya pemikiran dalam kehidupan melalui seni dan kaedah berfikir serta konsep insan. Topik utama dalam falsafah iaitu epistemologi, metafizik dan etika dibincangkan dalam konteks isu semasa. Penekanan diberi kepada falsafah sebagai asas bagi menjalin dialog antara budaya serta memupuk nilai sepunya. Di hujung kursus ini pelajar akan mampu melihat disiplin-disiplin ilmu sebagai satu badan ilmu yang komprehensif dan terkait antara satu sama lain.

References:

1. Al-Attas, S.M. Naquib. (1991). The Concept of Education in Islam. Kuala Lumpur: ISTAC.
2. Al-Farugi, I.R. (1994). Al-Tawhid: Its Implications for Thought and Life, (2nd Ed.). Herndon: IIIT.
3. Phillips, D.C. (Ed.) (2014). Encyclopaedia of Educational Theory and Philosophy, (1st Ed.). SAGE Publication.
4. Dzulkifli, A.R. & Rosnani, H. (2019) Pentafsiran Baharu Falsafah Pendidikan Kebangsaan dan Pelaksanaannya Pasca 2020. Kuala Lumpur: IIUM Press.
5. Hospers, J. (1997). An Introduction to Philosophical Analysis, (4th Ed.). London: Routledge.
6. Mitchell, H.B. (2011). Roots of Wisdom: A Tapestry of Philosophical Traditions, (6th Ed.). Wadsworth: Cengage Learning.
7. Osman Bakar. (1999). The Classification of Knowledge in Islam. Cambridge, U.K.: The Islamic Texts Society.

8. Rosnani Hashim. (2017). Revitalization of Philosophy and Philosophical Inquiry in Muslim Education. Kull of Education, IIUM.
9. Solomon, R.C. & Higgins, K.M. (2010). The Big Questions: A Short Introduction to Philosophy, (8th Ed.). Wadsworth: Cengage Learning.
10. Weiming, T. & Ikeda, D. (2011). New Horizons In Eastern Humanism: Buddhism, Confucianism and The Quest for Global Peace. London: I.B.Tauris.

UQU10702 *Appreciation, Ethnics and Civilization (Local)

Synopsis:
Kursus ini menerangkan tentang konsep etika daripada perspektif peradaban yang berbeza. Ia bertujuan bagi mengenalpasti sistem, tahap perkembangan, kemajuan dan kebudayaan sesuatu bangsa dalam mengukuhkan kesepaduan sosial. Selain itu, perbincangan berkaitan isu-isu kontemporari dalam aspek ekonomi, politik, sosial, budaya dan alam sekitar daripada perspektif etika dan peradaban dapat melahirkan pelajar yang bermoral dan professional. Penerapan amalan pendidikan berimpak tinggi (HIEPs) yang bersesuaian digunakan dalam penyampaian kursus ini. Di hujung kursus ini pelajar akan dapat menghubungkaitkan etika dan kewarganegaraan berminda sivik.

References:
1. Shamsul Amri Baharuddin. (2012). Modul Hubungan Etnik Edisi Dua. Bangi: Institut Kajian Etnik. Universiti Kebangsaan Malaysia. [DS595 .M62 2007].
2. Dworkin, A.G. (1999). The minority report: An introduction to racial, ethnic and gender relations. Fort Worth: Harcourt Barce College Pub. [E184.A1 .M56 1999].
3. Holst, F. (2012). Ethnicization and identity construction in Malaysia. New York: Routledge. [DS595 .H64 2012 v. 12].
4. Wan Hashim Wan Teh. (2011). Hubungan Etnik di Malaysia. Kuala Lumpur: ITNM. [DS595.W36 2011].
5. Zaid Ahmad. (2010). Hubungan Etnik di Malaysia. Oxford Fajar: Shah Alam. [DS595 .H822010].
6. Mohd. Ashraf Ibrahim. (2004).Gagasan Bangsa Malayan yang Bersatu 1945-57. Bangi : Penerbit UKM. [DS597.M37 2004]
7. Noor Aziah Mohd. Awal. (2003). Pengenalan kepada Sistem Perundangan di Malaysia. Petaling Jaya: International Law Book Services. [KPG68.N66 2003]
8. Eow Boon Hin. 2008. Moral Education. Shah Alam: Longman. (LC268.E48 2008)
9. Ahmad Khamis. 1999. Etika Untuk Institusi Pengajian Tinggi. Kuala Lumpur: Kumpulan Budiman. (LC315.M3.A35 1999)
10. Mohd Nasir Omar. 1986. Falsafah Etika; Perbandingan Islam dan Barat. Kuala Lumpur: JPM. (BL240.3.H87 2009)

UQI10102 Islamic Studies

Synopsis:
This course explains the concept of Islam as al-Deen. The scope of his discussion covers the study of Ulum al-Quran and Ulum al-Hadith; Akidah Ahli Sunnah Wal Jamaah; the stream of religious thought; the development of the school of Fiqh; Islamic Family Fiqh, Property Muamalat Fiqh; Islamic Criminal Law; Morality and Tasawwuf.

References:

Rujukan Utama:
1. Abd Shakor dan Lain-lain (2017), Modul Pembelajaran Pengajian Islam (UQI10102/10602), cetakan keenam 2017, Batu Pahat: Penerbit UTHM.
2. Sirajuddin Abbas K.H, (2016), I'tiqad Ahlussunnah Wal-Jama'ah, Kota Bharu: Pustaka Aman Press Sdn. Bhd.
3. Wan Mohd. Khairul Firdaus Wan Khairuddin, et.al., (2020), Mazhab Syafi'i; Legasi dan Pengaruhnya di Malaysia, Terngganu: Penerbit UnisZA
4. Abdul Razak Mutalib, (2016), 40 Hadis palsu dan lemah, Kuala Lumpur: Penerbitan PTS
5. Syed Ahmad Syed Abdullah Al-'Idrus, (2015), Bidaah yang sebenar dalam Islam, Batu Pahat: Institut Ahli Sunnah WalJamah. (BP130.4 S23 2015)
6. Harun Din (Dr.) (2015), Manusia Dan Islam, cetakan pertama, Kuala Lumpur: Dewan Bahasa dan Pustaka. (BP174 .M36 2015)
7. Mustafa al-Khin, Mustafa al-Bugha & Ali Asy-Syarbaji (2014), Al-Fiqh Al-Manhaji Mazhab Al-Syafie, terjemahan Zulkifli al-Bakri et.al, Putrajaya: Jabatan Kemajuan Islam Malaysia.
8. al-Anjari, Fouzi (2013), Al-Asya'irah: Akidah Sebenar Ahli Sunnah Wal Jamaah, Seremban: Creative Publika. (BP166.14. A54 2013)
9. Ramli Awang (2013), Akidah Penghayatan Tauhid al-Quran, Johor: Penerbit UTM Press. (BP165.5 R35 2013)
10. T. Nama (2013), Pengurusan, Etika Kerja dan Personaliti: Perspektif Islam, Perlis: UMP. (BP190.5.M28. P46 2013)

Rujukan tambahan:
11. Irwan Mohd Subri, (2011), Kajian Syariah dan Undang-undang, Negeri Sembilan: Universiti Sains Islam Malaysia. (KPG68. K34 2011)
12. Roziah Sidik (2011), Pengajian Islam, Selangor: Oxford Fajar. (BP42. R69 2011)
13. Mohd Fauzi Mohd Amin (2011), Pemerkasaan Fardhu Kifayah berteraskan al-Quran dan al-Sunnah, Negeri Sembilan: USIM. (BP130.8. P45 2011)
14. Roziah Sidik (2011), Pengajian Islam, Selangor: Oxford Fajar. (BP42. R69 2011)
15. Mohd Fauzi Mohd Amin (2011), Pemerkasaan Fardhu Kifayah berteraskan al-Quran dan al-Sunnah, Negeri Sembilan: USIM. (BP130.8. P45 2011)
16. Azzam, Abdul Aziz Muhammad (2010), Fiqh Muamalat: Sistem Transaksi dalam Fiqh Islam, Jakarta: Amzah. (BP158.C59. A99 2010)
17. Ismail Haji Ali, (1995), Pengertian dan Pegangan Iktikad yang benar: Ahli Sunnah Wal Jamaah: Kuala Lumpur: Penerbitan al-Hidayah. (BP166.78. P46 1995)
18. Abdur Rahman I Doi (1995), Undang-undang Syariah, terjemahan Rohani Abdul Rahim, Kuala Lumpur: Dewan Bahasa dan Pustaka. (BP173.6. A72 1995)
19. Mohammad Muslehudin (1989), Insuran dan Hukum Islam, Kuala Lumpur: Dewan Bahasa dan Pustaka. (BP190.5. I67 M65 1989)

UQI10102 Moral Studies

Synopsis:

Kursus ini menerangkan tentang konsep moral, akhlak, etika dan nilai serta kepentingannya dalam kehidupan seharian. Perbincangannya meliputi pembahagian, falsafah, piawai dan teori moral serta nilai-nilai murni agama besar di dunia. Moral dalam pelbagai bidang pekerjaan, etika dalam sains dan teknologi serta isu-isu moral semasa.

References:

Rujukan Utama :
1. Abdullah Zhidi Bin Omar. 2018. Pengantar Pendidikan Moral: IPTYA, IPTS, IPG & Kolej. Kuala Lumpur: Sasbadi.
2. Abdullah Zhidi Omar; Mahdi Shuid. 2013. Pengantar Pendidikan Moral. Kuala Lumpur: Sasbadi.
3. Abdul Rahman. 2019. Pembentukan Nilai Moral Sejagat dan Hubungannya dengan Konsep Rahmatan lil 'alamin. Kuala Lumpur : MAIWP&KIRKHS, IIUM.
4. Friedrich Nietzsche. 2015. Beyond Good And Evil. London: Penguins Books, LTD.
5. Mark Alfano. 2016. Moral Psychology: an Istroduction. Cambridge: Polity Press.
6. Shuhairimi Abdullah. 2017. Prinsip Nilai Murni dari perspektif Islam. Kangar: Penerbit UniMap.

Rujukan Tambahan :
1. Eow Boon Hin. 2008. Moral Education. Shah Alam: Longman. (LC268.E48 2008)
2. Ahmad Khamis. 1999. Etika Untuk Institusi Pengajian Tinggi. Kuala Lumpur: Kumpulan Budiman. (LC315.M3.A35 1999)
3. Mohd Nasir Omar. 1986. Falsafah Etika; Perbandingan Islam dan Barat. Kuala Lumpur: JPM. (BL240.3.H87 2009)

Rujukan e-Book

1. E-Modul P&P Pengajian Moral (UTHM)

UQI10902 **Islam in Malaysia (international)

Synopsis:
This course explains the knowledge about Islam in Malaysia. The scope of study includes the history of Islam in Malaysia; belief and practice of Muslims in Malaysia in accordance to aqidah Ahl Sunnah Wal Jamaah and Shafie Sect; Islamic institutions in Malaysia such as royal, social, political, financial and current Islamic issues.

References:

1. Mohammed Ibrahim. (2000). The Administration of Islamic Law In Malaysia. Kuala Lumpur: Institute of Islamic Understanding Malaysia. KPG479.A56 2000
2. Kamarulnizam Abdullah. (2003). The Politics of Islam in Contemporary Malaysia. Bangi: Penerbit Universiti Kebangsaan Malaysia. BP63.M4 .K35 2003
3. Khaliq Ahmad. (2006). Management from Islamic Perspective. Kuala Lumpur: Penerbit UIA. BP190.5M28.K42 2006
4. Stauth, Georg. (2002). Politics and Cultures of Islamization in Southeast Asia: Indonesia and Malaysia in the Nineteen-nineties. Bielefeld: Transcript. BP63.I5 .S72
5. Hussin Mutalib (2008). Islam in Southeast Asia. Singapore: Institute of South East Asian Studies. BP63.A38 .H87 2008

Courses listed below are also part of University requirement:

UQU10902	*Integrity and Anti-Corruption (local)
UQU11802	**Malaysia Studies and Culture (international)
UQ*1XXX1	Co-Curriculum I
UQ*1XXX1	Co-Curriculum II

***All courses related to Social Science, Co-Curriculum and Islamic Studies are conducted by Centre for General Studies and Co-Curricula (PPUK, UTHM). Kindly visit their website or contact for more information.on.*

SYNOPSIS OF CORE MATHEMATICS COURSES

BEE11203 Ordinary Differential Equations

Synopsis:

This course is mainly about the study of mathematical concept through the use of knowledge of differential equation. First, students will be introduced the concept of differential equation including the first order differential equation, second order differential equation and system of first-order differential equations. Then, the concept of series solution for differential equations. Next, students will be introduced to the techniques of Laplace transform for solving differential equations.

Pre-requisite: BEE 10103 Calculus

References:

1. Stroud, K. A., Booth, D. J. (2011). Advanced Engineering Mathematics. 5th Ed. USA: Palgrave Macmillan.Call number: TA330.S76 2011.
2. Stroud, K. A., Booth, D. J. (2007). Engineering Mathematics. 6th Ed. USA: Palgrave Macmillan.Call number: TA330 .S77 2007.
3. Abd Wahid M. R, Mohamad M.N. (2008). Differential Equations for Engineering Students. Malaysia: Comtech.Marketing Sdn. Bhd.Call number: QA372 .D38 1992, QA371 .D44 2002 N1.
4. Peter V. O'Neil. (2003). Advanced Engineering Mathematics. Thomson Brooks/Cole. Call number: TA330 .O53 2007, TA330 .O53 2003, TA330 .O53 1995, TA330 .O53 1993.

BEE20303 Multivariable Calculus

Synopsis:

This course aims to equip students with the knowledge of Functions of Several Variables, Coordinate Systems, Multiple Integrals and Vector Calculus, as the basic knowledge to support their engineering courses.

References:

1. Mendelson, Elliott (2022). Schaum's Outline of Calculus. 7th ed. New York: McGraw Hill.
2. https://www-accessengineeringlibrary-com.ezproxy.uthm.edu.my/content/book/9781264258338
3. James Stewart, Daniel Clegg, and Saleem Watson (2021). Calculus: Metric Version. 9th ed. USA: Cengage Learning.
4. Deborah Hughes-Hallett, Andrew M. Gleason, William G. McCallum (2021). Calculus: Single and Multivariable, 8th ed. USA: Wiley
5. Lipschutz, Seymour, John Liu, and Murray R. Spiegel (2018). Schaum's Outline: Mathematical Handbook of Formulas and Tables. 5th ed. New York: McGraw-Hill Education. https://www-accessengineeringlibrary-com.ezproxy.uthm.edu.my/content/book/9781260010534
6. Robert T. Smith, and Roland B. Minton (2012). Calculus Early Transcendental Function (3rd Edition). New York: McGraw-Hill (QA303.2 .S644 2012)
7. Wrede, Robert, and Murray Spiegel (2010). Schaum's Outline of Advanced Calculus. 3rd ed. New York: McGraw-Hill. [Call number: QA303.2 .W74 2010]
8. https://www-accessengineeringlibrary-com.ezproxy.uthm.edu.my/content/book/9780071623667

BEE32402 Numerical Methods

Synopsis:

This course introduces several techniques to solve mathematical engineering problems using numerical estimation and requires an elementary knowledge of functions and linear algebra. It begins with an introduction to a computational method, followed by discussing the several algorithms to solve

a linear and a non-linear equation. An analysis using numerical methods on differentiation and integration equations also will be introduced. Besides, an estimation technique using the extrapolation method will be taught to improve result accuracy.

References:

1. Kim Gaik Tay, Chang Phang, Piau Phang (2022). Numerical Methods with CASIO FX-570EX CLASSWIZ CALCULATOR, Penerbit UTHM.
2. Esfandiari, Ramin S (2017). Numerical methods for engineers and scientists using MATLAB - 2nd ed. CRC Press, Taylor & Francis Group. [Library call no.: TA335. E84. 2017]
3. Petras, Ivo. (2016). Advances in numerical methods in engineering with MATLAB. Auris Reference Ltd. [Library call no.: QA297. A38. 2016]
4. Chapra, Steven C. (2015). Numerical methods for engineers - 7th ed. McGraw-Hill Education. [Library call no.: TA345. C42. 2015]
5. Qingkai Kong, Timmy Siauw ,Alexandre M.Bayen (2020).Phyton Programming and Numerical Methods : A Guide for Engineers and Scientists, https://www-sciencedirect-com.ezproxy.uthm.edu.my/book/9780128195499/python-programming-and-numerical-methods

BEE32502 Engineering Statistics

Synopsis:

This course introduces the concept of statistics to be applied in engineering applications. topics covered in this course include sampling distributions, estimation, hypothesis testing, and linear regression. relevant software will be used to perform statistical analysis to generate conclusion based on the given data.

References:

1. James T. McClave (2013). Statistics (12th Edition). Pearson. QA276.12 .M34 2013
2. William Navidi (2015). Statistics for engineers and scientists (4th edition). McGraw-Hill. QA276.4 .N38 2015
3. Ronald E. Walpole (2016). Probability and statistics for engineers and scientists (9th edition)). Pearson. TA340 .P79 2016
4. Deborah J. Rumsey (2019). Statistics essential for dummies. John Wiley and Sons. Online: https://ebookcentral.proquest.com/lib/uthm-ebooks/detail.action?docID=5751855&query=

SYNOPSIS OF CORE FACULTY COURSES

BEE12202 Occupational Safety and Health

Synopsis:
This course introduces students to knowledge and skills in occupational safety and health in workplace. Scope of study includes Health, Safety and Environment Managements: Introduction to OSH, OSHA (Amendment) 2022, FMA (Repealed) 1967, EQA 1974, Occupational Safety and Health Management System, Safety, Health and Environment Culture; Risk Management and Assessment: Introduction to Risk Management, Risk Assessment Techniques, HIRARC; Physical Injury & Controls: Introduction to Physical Injury, Construction Work, Electrical Work, Mechanical Work, Chemical Work; Health Hazards: Introduction to Health Hazards & Hygiene, Chemical Hazards, Physical Hazards, Biological Hazards, Hygiene; Accident Investigation & Reporting: Introduction, Accident Investigation, Investigations and Causes of Incident, Incident Analysis and Data Collection Method.

References:

1. Ismail Bahari. (2006). Pengurusan Keselamatan dan Kesihatan Pekerjaan. Edisi ke-2. McGraw Hill Education (Malaysia). Call number: T55.I85 2006
2. Goetsch, D. L. (2021). Occupational safety and health for technologists, engineers, and managers (9th ed.). Pearson.
3. Brauer, R. L. (2022). Safety and health for engineers (4th ed.). Wiley.
4. Friend, M. A., & Kohn, J. P. (2018). Fundamentals of occupational safety and health (7th ed.). Government Institutes.
5. Singh, H. (2021). Decades of occupational safety and health in Malaysia. University of Malaya Press.
6. Sariwati, M. S. (2011). Occupational safety and health management: Using new OBE curriculum. Universiti Teknologi MARA.

BEE22402 Creativity and Innovation

Synopsis:
This course equips students with creative problem-solving and innovative thinking skills, preparing them for future decision-making. It introduces methodologies like Design Thinking and Theory of Inventive Problem Solving (TRIZ), teaching students to approach challenges empathetically and systematically. By analyzing industry problems, addressing contradictions, and fostering innovation, students learn to develop inventive solutions. They will also gain practical experience through exhibitions and competitions. Additionally, they will build a professional presence by preparing resumes, video resumes, and LinkedIn profiles, ensuring they are well-prepared for industry demands and career opportunities from their first year of university.

References:

1. Gadd, Karen (2011), TRIZ for engineers: enabling inventive problem solving, ISBN 9780470741887, (T212 .G32 2011).
2. Savransky, Semyon D.(2000), Engineering of creativity : introduction to TRIZ methodology of inventive problem solving ISBN 9780849322556 (TA153 .S28 2000)
3. Terninko, John (1998), Systematic innovation : an introduction to TRIZ ; (theory of inventive problem solving) ISBN 9781574441116 (HD30.29 .T47 1998)
4. Rantanen, Kalevi, Simplified TRIZ : New problem-solving applications for engineers and manufacturing ISBN 9781574443233 (TA153 .R36 2002 n.1)
5. Kai Yang (2005) Design for Six Sigma for Service, 1st Edition ISBN 9780071445559, MacGraw-Hill Education
6. Kyriaki Papageorgiou, Olga Kokshagina. (2022). Envisioning the Future of Learning for Creativity, Innovation and Entrepreneurship. Berlin : De Gruyter. Retrieved from https://eds.p.ebscohost.com/eds/detail/detail?vid=3&sid=f57b3ebc-9939-4aab-af76-9958eaff92cf%40redis&bdata=JnNpdGU9ZWRzLWxpdmUmc2NvcGU9c2l0ZQ%3d%3d#AN=3307519&db=nlebk
7. Charles Prather (2010) Manager's Guide to Fostering Innovation and Creativity in Teams, 1st Edition, McGrawHill. https://www-accessengineeringlibrary-com.ezproxy.uthm.edu.my/content/book/9780071627979/front-matter/preface1
8. Kai Yang (2005) Design for Six Sigma for Service, 1st Edition, McGrawHill. ISBN: 9780071445559

https://www-accessengineeringlibrary-com.ezproxy.uthm.edu.my/content/book/9780071445559/chapter/chapter9
9. Issac Lim Sing Sheng (2023) Improving Product Ideation Among Engineering Undergraduates Using TRIZ and Design Thinking ISBN:979-8-3503-0742-9 https://ieeexplore-ieee-org.ezproxy.uthm.edu.my/stamp/stamp.jsp?tp=&arnumber=10264033
10. Reilly Ger;Murphy Mike;Nagy Balázs Vince;Järvinen Hannu-Matti (2023) Multicultural Online Collaborative Learning: Students' Engagement in Design Thinking Framework ISBN: 978-1-5231-5735-8 https://app.knovel.com/hotlink/pdf/rcid:kpBPACESE1/id:kt013GRO5D/book-proceedings-51st/multicultural-online?kpromoter=federation

BEE22503 Engineering Economic and Entrepreneurship

Synopsis:
This course covers topics about engineering economics and entrepreneurship. On the engineering economics aspect, the course starts with the analysis of engineering economics and subsequently the principles and application of money-time relationships. On the other hand, this course considers various topics related to basic entrepreneurship including introduction to technology entrepreneurship, business plan and ownership, new product development and intellectual properties, technology commercialization and managing business.

References:
1. DeGarmo, E. Paul (1997). Engineering Economy, Prentice-Hall, TA177.4. E63. 1997.
2. Sullivan, William G. (2009). Engineering Economy, Pearsonl, TA177.4 .S94 2009.
3. Kamariah Ismail, Noraini Abu Talib, Mohd. Hassan et al. (2009). Technology Entrepreneurship, Prentice-Hall. Call number HD45 .T44 2009.
4. UiTM Entrepreneurship Study Group (2004). Fundamentals of Entrepreneurship, revised edition, Prentice-Hall. Call number HB615 .F86 2004.
5. Bruce R. Barringer, R. Duane Ireland (2010). Entrepreneurship: successfully launching new ventures, 3rd Edition. Prentice-Hall. Call number HB615 .B37 2010.
6. Charles E. Bamford, Garry D. Bruton (2011). Entrepreneurship: a small business approach. New York: McGraw-Hill. Call number HD62.5 .B35 2011.
7. Schaper M., Volery, T, Weber, P., Lewix, K., (2011). Entrepreneurship and small business; 3rd Asia-Pacific Edition. John Wiley & Son. Call number HD2341 .E57 2011.
8. Jamal Nassar, (2018) Technopreneurship Financing & Startups Ecosystem: How Malaysia Is Creating Another Success Story; Call number HD62.5 .J35 2018
9. Rambat Lupiyoadi, Kurniawan (2020) Technopreneurship, Penerbit Salemba Empat 2020.
10. Shelters David (2013) Start-Up Guide for the Technopreneur, John Wiley, Call number: HD62.37 .S43

BEE30103 Engineering Management

Synopsis:
This course introduces students the role of engineer in management principles that are applied in This course introduces students the role of engineer in management principles that are applied in engineering project and organization. Students learn the basics of managing people and responsibilities as an engineering manager. The management functions consists of planning, organizing, leading and controlling are exposed to the students which include management tools that comprises of taguchi, kaizen, enterprise resource planning (ERP) and six-sigma technique. In addition, elements such as quality management, project management and activities related to lean production, maintenance and reliability are also included in this course.

References:
1. Lucy C. Morse, Daniel L Babcock (2023), Managing Engineering and Technology, 7th Edition, Upper Saddle River, Pearson. [Call Number TA190 .M68 2023].
2. C. M. Chang (2005), Engineering Management: Challenges in the New Millennium, Upper Saddle River, Pearson. [Call Number TA190 .C42 2005].
3. Avraham Shtub, Jonathan F. Bard, Shlomo Globerson (2021), Project Management: Processes, Methodologies and Economics, 3rd Edition, Upper Saddle River, Pearson. [Call Number TA190.

S57 2021].
4. John V. Chelsom, Andrew C. Payne (2004), Management for Engineers, Scientists and Technologists, 2nd Edition, Hoboken, John Wiley. [Call Number TA190 .C44 2005].
5. Mohamed Ben-Daya, Salih O. Duffuaa, Abdul Raouf, Jezdimir Knezevic, Daoud Ait-Kadi (2009), Handbook of maintenance management and engineering, New York: Springer. [Call Number TS192 .H37 2009].
6. D.R. Kiran (2022), Principles of Economics and Management for Manufacturing Engineering. Elsivier. https://www-sciencedirect-com.ezproxy.uthm.edu.my/book/9780323998628/principles-of-economics-and-management-for-manufacturing-engineering#book-info
7. Albert Lester (2021), Project Management, Planning and Control Managing Engineering, Construction and Manufacturing Projects to PMI, APM and BSI Standards. Elsivier. https://www-sciencedirect.com.ezproxy.uthm.edu.my/book/9780128243398/project-management-planning-and-control

BEE32302 Engineer and Society

Synopsis:
To provide knowledge and understanding about the importance of ethics in the engineering profession, and to develop qualities and skills required by engineers to perform their roles and responsibilities competently for the benefit of mankind and nature.

References:
1. Harris, C.E., Pritchard, M.S., Rabis, M.J., James, R., Englehardt, E., Engineering Ethics: Concepts and Cases, (6th Edition) Wadsworth Cengage Learning, Massachusetts, 2018. (TA157 .H37 2018).
2. Babcock, D.L., Managing Engineering and Technology: An Introduction to Management for Engineers (7th Edition), Prentice Hall, Englewood Cliffs, New Jersey, 2019 (TA190 .32 2019)
3. SerdarAsan, Ş. & Işıklı, E. (Eds.). (2020). Engineering Education Trends in the Digital Era. IGI Global. https://doi-org.ezproxy.uthm.edu.my/10.4018/978-1-7998-2562-3
4. Murthy, J. N., C., L., & Kosaraju, S. (2020). Ethics in Engineering Profession: Pedagogy and Practices. In K. Kumar & J. Davim (Eds.), Methodologies and Outcomes of Engineering and Technological Pedagogy (pp. 296-318). IGI Global. https://doi-org.ezproxy.uthm.edu.my/10.4018/978-1-7998-2245-5.ch014
5. Clark, R. P. & Andrews, J. (2019). Engineers for Industry: Challenges, Solutions, and Future Ideas. In E. Smirnova & R. Clark (Eds.), Handbook of Research on Engineering Education in a Global Context (pp. 35-45). IGI Global. https://doi-org.ezproxy.uthm.edu.my/10.4018/978-1-5225-3395-5.ch004
6. Guideline for Code of Professional Conduct (BEM/RD/PPC/08) Date: 27.10.2016 http://www.bem.org.my/code-of-professional-conduct#:~:text=Print%20Code%20of%20Professional%20Conduct.%20MORE.%20Board%20of

SYNOPSIS OF CORE PROGRAMME COURSES

BEV10102 Computer Programming

Synopsis:
This course provides comprehensive programming concepts through the use of high-level programming languages such as C language. After completing this course, student should be able to design, code, debug, test and document well-structured programs based on technical or real engineering problems.

References:

1. Harper. A, Ryan.L, Stephen. S, Michael B., Daniel F., Huáscar T., and Moses F. (2022). Programming Survival Skills. Chap. 2 in Gray Hat Hacking: The Ethical Hacker's Handbook. 6th ed. New York: McGraw-Hill. https://www-accessengineeringlibrary-com.ezproxy.uthm.edu.my/content/book/9781264268948/chapter/chapter2
2. Boussaha, K., Hanneche, A., & Chaoua, Z. (2022). Computer Programming Practical Works Activities: From Human to Automatic Scoring. In J. Zhao & J. Richards (Eds.), Virtual Technologies and E-Collaboration for the Future of Global Business (pp. 154-181). IGI Global. https://doi-org.ezproxy.uthm.edu.my/10.4018/978-1-6684-5027-7.ch009
3. Management Association, I. (Ed.). (2021). Research Anthology on Recent Trends, Tools, and Implications of Computer Programming. IGI Global. https://doi-org.ezproxy.uthm.edu.my/10.4018/978-1-7998-3016-0
4. King, K.N.(2008).C Programming: A Modern Approach. 2nd ed. New York: W.W.Norton. Call number:QA76.73.C15.K562008
5. Jeri R. Hanly and Elliot B. Koffman (2004). Problem Solving and Program Design in C. 4th ed. USA: Addison-Wesley. Call number: QA76.73.C15 .H364 2004

BEV10303 Electric Circuit I

Synopsis:
This course provides a comprehensive overview of essential concepts and principles in electrical circuits including basic laws and circuits analysis techniques. Topics covers fundamental definitions including units, electric charge, voltage, current, power, and energy. The Ohm's Law, Kirchhoff's Laws will be studied alongside series and parallel resistor circuits, voltage and current division, and power calculations. Electrical circuit analysis techniques and concepts will be covered through mesh and nodal circuit analysis, circuit reduction techniques Thevenin's Theorem, Norton's Theorem, maximum power transfer theorem and Superposition theorem. Topics also include instantaneous current and voltage, average and effective values of periodic signals, and average power absorbed by ideal resistors.

References:

1. Alexander, C. K. & Sadiku, M.N.O.; Fundamentals of Electric Circuits; McGraw-Hill 5th Editions; Call number : TK454.A43 20138
2. J. David Irwin; Basic Engineering Circuit Analysis, 8th Ed.; John Wiley & sons; 2005. Call number : TK454 .I78 2005
3. James W. Nilsson & Susan A. Riedel; Electric Circuits; Prentice-Hall; 2008. Call number : TK454 .N54 2011
4. William H Hayt & Jack E Kemmerly, Engineering Circuit Analysis, McGraw Hill, 2002. Call number : TK454 .I78 2011
5. James W. Nilsson & Susan A. Riedel; Introductory circuits for electrical and computer engineering; Prentice-Hall 2008. Call number : TK7867 .N54 2002
6. Nahvi, Mahmood, and Joseph A. Edminister. 2018. Schaum's Outline of Electric Circuits. 7th ed. New York: McGraw-Hill Education.https://www-accessengineeringlibrary-com.ezproxy.uthm.edu.my/content/book/9781260011968
7. Patrick, Dale R. Fardo, Stephen W. Richardson, Ray E. Chandra, Vigyan (Vigs). (2022). DC/AC Electrical Fundamentals. River Publishers. https://app.knovel.com/hotlink/toc/id:kpDCACEF01/dc-ac-electrical-fundamentals/dc-ac-electrical-fundamentals

BEV10403 Electric Circuit II

Synopsis:
The course has been designed to apply the techniques and principles of electrical circuit analysis to solve DC and AC circuits. Topics in this course include energy storage elements, transient and steady-state responses of RC, RL, and RLC circuits; complex impedance, circuits with DC and sinusoidal sources, steady-state power, and power factor correction. The two-port network topic is also introduced for advanced circuit analysis.

Pre-requisite: BEV10303 Electric Circuits I

References:

1. Alexander, C. K. & Sadiku, M.N.O.; Fundamentals of Electric Circuits; McGraw-Hill 5th Ed.; Call number: TK454 .A43 2013
2. J. David Irwin; Basic Engineering Circuit Analysis, 8th Ed.; John Wiley & sons; 2005. Call number : TK454 .I78 2005
3. James W. Nilsson, Susan A. Riedel; Electric Circuits; Prentice-Hall 9th Ed.; 2011. Call number : TK454 .N54 2011
4. William H Hayt & Jack E Kemmerly, Engineering Circuit Analysis, McGraw Hill, 2002. Call number : TK454 .I78 2011
5. Wang, Meizhong. (2019). Understandable Electric Circuits - Key Concepts (2nd Edition).Institution of Engineering and Technology (The IET). Retrieved from https://app.knovel.com/hotlink/toc/id:kpUECKCE03/understandable-electric/understandable-electric
6. Gibilisco, Stan, and Simon Monk. 2022. “Direct-Current Circuit Analysis.” Chap. 5 in Teach Yourself Electricity and Electronics. 7th ed. New York: McGraw Hill. https://www-accessengineeringlibrary-com.ezproxy.uthm.edu.my/content/book/9781264441389/chapter/chapter5
7. Malik, Om. 2015. Handbook of Electric Power Calculations. 4th ed., edited by H. Wayne Beaty and Surya Santoso. New York: McGraw-Hill Education. https://www-accessengineeringlibrary-com.ezproxy.uthm.edu.my/content/book/9780071823906
8. Yang, Won Y. Kim, Jaekwon Park, Kyung W. Baek, Donghyun Lim, Sungjoon Joung, Jingon Park, Suhyun Lee, Han L. Choi, Woo June Im, Taeho. (2020). Electronic Circuits with MATLAB®, Pspice®, and Smith Chart - 8.1.1 Definitions and Examples of Two-Port Parameters. (pp. 678). John Wiley & Sons. Retrieved from https://app.knovel.com/hotlink/pdf/id:kt012EQK51/electronic-circuits-with/definitions-examples

BEV10503 Analog Electronics

Synopsis:
This course provides fundamental knowledge in analog electronics. It encompasses basic electronic semiconductor devices such as a diode, bipolar junction transistor (BJT), and field effect transistor (FET). The emphasis is on the design aspects and applications which include the amplifier design, frequency response analysis of amplifiers, and power amplifier. The course has been designed to provide basic analog electronic skills covering theories and practices.

Pre-requisite: BEV10303 Electric Circuits I

References:

1. R.Boylestad, L. Nashelsky; Electronic Devices and Circuit Theory, 11th Edition; Prentice Hall; 2013. Call number: TK7867 .B69 2013
2. Thomas L. Floyd, Electronics Fundamentals: Circuits, Devices and Applications, 8th Ed., Prentice Hall, 2013. Call number: TK7816 .F56 2007
3. Albert Malvino, David J. Bates, Patrick E. Hoppe, Electronic Principles, 9th Ed., McGraw Hill, 2021. ISBN 978-1-260-57056-4
4. John Bird, Electrical and Electronic Principles and Technology, 6th Ed., Routledge, 2017. ISBN: 9781138673526
5. S. Salivahanan, Basic Electronics and Devices, McGraw-Hill Education, 2018. ISBN: 9789353160944
6. Ram Niwas (IES), Electronic Devices And Analog Electronics, Vol 1., 2021.
7. D.I. Crecraft and S. Gergely (2002). Analog Electronics Circuits, Systems and Signal Processing. Elsevier. https://www-sciencedirect-com.ezproxy.uthm.edu.my/book/9780750650953/analogelectronics

BEV10603 Digital Electronics

Synopsis:
The course begins with the introduction to digital systems, followed by representation of physical values in digital form. The basic logic gates and symbols are introduced covering Boolean expressions, truth tables and timing diagrams. Combinational logic gates is implemented in certain function, analyzing circuits to obtain its Boolean expression followed by logic simplification using Boolean theorem and Karnaugh-map approach. In digital arithmetic system, adder circuits are introduced, starting from half adder, full adder and the design of the carry look-ahead adder and BCD adder. Then, on to MSI logic circuits such as encoder, decoder, multiplexer and demultiplexer. Memory elements such as latches and flip-flops are introduced followed by the related flip-flop applications.

References:

1. Thomas L. Floyd. (2013). Digital fundamentals : a systems approach . Boson : Pearson. Call number: TK7868.D5 .F56 2013
2. Richard S. Sandige, Michael L. Sandige (2012). Fundamentals of digital and computer design with VHDL.New York : McGraw Hill. Call Number: TK7868.D5 .S26 2012
3. William J. Dally, R. Curtis Harting (2012). Digital design : a systems approach. Cambridge : Cambridge University Press. Call Number: TK7868.D5 .D34 2012
4. Stephen Brown and Zvonko Vranesic (2014).Fundamentals of digital logic with Verilog design. Dubuque : McGraw-Hill Higher Education, Ltd. Call number: TK7868.L6 .B76 2014
5. M. Rafiquzzaman (2014). Fundamentals of digital logic and microcontrollers. Wiley. Call Number: TK7888.4 .R34 2014
6. Guy Even, Moti Medina (2012). Digital logic design : a rigorous approach. Cambridge : Cambridge University Press. Call number: TK7868.L6 .E83 2012
7. Tertulien Ndjountche (2016). Digital Electronics 1 : Combinational Logic Circuits, John Wiley & Sons, Incorporated, 2016. ProQuest Ebook Central, https://ebookcentral.proquest.com/lib/uthm-ebooks/detail.action?docID=4560567.
8. Larry Massengale (2018), Digital Systems Design, Volume III : Latch-Flip-Flop Circuits and Characteristics of Digital Circuits, https://ebookcentral.proquest.com/lib/uthm-ebooks/detail.action?docID=5639119&query=flip%20flop
9. Larry Massengale (2018), Digital Systems Design, Volume II : Developmental Methods and Combinational Logic Circuits, https://ebookcentral.proquest.com/lib/uthm-ebooks/detail.action?docID=5639116&query=digital%20logic

BEV20103 Electrical Measurement and Instrumentation

Synopsis:
The course Instrumentation and Measurement (BEJ10702) introduces fundamental concepts in measurement and instrumentation. It covers key topics such as units and dimensions, measurement standards, types of errors, calibration methods, and noise analysis. The course emphasizes the use of measurement devices, including galvanometers, ammeters, voltmeters, wattmeters, and sensors for temperature, force, torque, and pressure. Students will gain simulation skills in using oscilloscopes for voltage, frequency, and phase measurement and will explore advanced instrumentation systems using tools like MATLAB and LabVIEW. The course also highlights the integration of sensors into practical instrumentation applications and the design of precise measurement systems.

References:
1. *Sivaraman P.;Sharmeela C.;Nayagi A. Thaiyal;Mahendran R.Basic Electrical and Instrumentation Engineering,2021. https://app.knovel.com/hotlink/pdf/rcid:kpBEIE0002/id:kt012IR2D4/basic-electrical-instrumentation/electrical-electronic?kpromoter=federation.*
2. *R. G. Gupta, Electronic Instruments and Systems: Principles, Maintenance and Troubleshooting, McGraw Hill, 2001. Call number: TK7870.2G86 2001*
3. *L. D. Jones, and C. A. Foster, Electronic Instruments and Measurements. Prentice Hall International Edition, 1991. Call number: TK7878.4 .J66 1991*
4. *D. A. Bell, Electronic Instrumentation and Measurements, 2nd Edition. Prentice Hall Career and Technology, 1994. Call number: TK7878 .B45 1994*

BEV20203 Transform Circuit

Synopsis:
This course provides further study in the analysis of linear circuits using advanced mathematics. Topics include mathematical representation and operations on signal waveforms, time domain circuit analysis using the convolution integral, transient and steady-state analysis of circuits using Laplace transform, steady-state analysis of circuits using Fourier series, transient and steady-state analysis of circuits using Fourier transform.

Pre-requisite: BEE 11203 Ordinary Differential Equations

References:
1. Irwin J D, Basic Engineering Circuit Analysis, MacMillan Publishing Co. 2011. Call Number: TK454 .I78 2011
2. Charles K. Alexander and Matthew N. O. Sadiku, Fundamentals of Electric Circuits, 5th Edition, McGraw-Hill, 2013. Call Number: TK454. A3 20133.
3. Hart W A, Kemmerly J E, Durbin S M, Engineering Circuit Analysis, McGraw-Hill 2007. Call Number: TK454 .H39 2007
4. DeCarlo R A, Pen-Min Lin, Linear Circuit Analysis, Prentice Hall, 2002. Call Number: TK454. D33

2002
5. James W N and Susan A R. Electric Circuits, 9th Edition, Addison Wesley 2011. Call Number: TK454 .N54 2011

BEV20303 Electromagnetics Fields and Waves

Synopsis:
This course is to introduce the fundamental of electromagnetics including electrostatic, magnetostatic and electromagnetic waves. The main laws governing the electrostatic and magnetostatic will be discussed thoroughly.

Pre-requisite: BEV20303 Multivariable Calculus

References:

1. Element of Electromagnetic, Matthew M.O. Sadiku, 4th Edition, Oxford University Press, 2001 (Repr. 2003). Call Number: QC760.S324 2007
2. Elements of Engineering Electromagnetics, Sadiku, Matthew N. O. New York: Oxford University Press, 2001 (Repr. 2003) Call Number: QC760.S324 2001
3. Engineering Electromagnetics, William H. H, McGraw-Hill, 7th ed.: McGraw-Hill, 2006. Call Number: QC670 .H39 2006
4. Electromagnetics for Engineers, Fawwaz T. Ulaby, Pearson Education, 2005.Call Number: QC760. U424 2005
5. Fundamentals of engineering electromagnetics, Bansal, Rajeev, Boca Raton, FL: Taylor & Francis, 2006. Call Number: QC760. F86 2006

BEV20403 Polyphase Circuit

Synopsis:
This course introduces the fundamental concepts on electrical polyphase system. It starts with the concept of polyphase voltage generation, followed by three-phase 4-wire and 3-wire systems. Balanced and unbalanced systems will be covered, as well as Δ-Y transformation and three-phase complex power calculations. Single-line diagram will be introduced, followed by three-phase transformers, transmission line models and per-unit system.

References:

1. Chapman Stephen J, Electric Machinery and Power System Fundamentals, McGraw-Hill, 2012. Call Number: TK2000 .C42 2012
2. Hadi Saadat, Power System Analysis, 2nd Edition, Prentice Hall, 2002. Call Number: TK1011. S33 2002
3. Theodore Wildi, Electrical Machines, Drives and Power Systems, Prentice Hall, 2006. Call Number:
   182. W54 2006
4. Timothy L. S, William E. D., Electrical Power and Controls, 2nd Edition, Prentice Hall, 2004. Call Number: TK1001. S48 2004

BEV20501 Electric Engineering Laboratory I

Synopsis:
The purpose of this course is to introduce the students about the basic concepts of electrical wiring installations including installation of lighting circuit, power circuit and electrical supply system. The methods of measuring DC and AC circuits using various types of measurements meters are also covered in this course. The contents of this course consists of Electrical Wiring Installation for Lighting Circuit, Electrical Wiring Installation of Power Circuit, Electrical Wiring Installation for Electrical Supply System Belong From KWh Meter to Consumer Control Unit, Basic Statistical Sampling, Measurement Using DC Bridges, Power Measurement of DC and AC Single Phase Load, Basic Electrical Measurement Using DC Source, Basic Electrical Measurement Using AC Source and AC Voltage Measurement by Using Oscilloscope.

References:

1. Alexander (2009). Sadiku, Fundamentals of Electric Circuits, 3rd Ed., McGraw Hill. Call Number: TK454. A43 2009.

2. Floyd, Thomas L. (2010). Electrical Circuits Fundamentals, NJ Pearson. Call Number: TK454 .F56 1020
3. Boylestad (2010). Introductory Circuit Analysis, 11th Edition, NJ Pearson. Call Number: TK454 .B69 2010.
4. James W. Nilsson, Susan A. Riedel (2008). Electric Circuits, 7th Ed., Upper Sadle River, NJ Pearson. Call Number: TK454 .N54 2008.
5. James W. Nilson, Susan A. Riedel (2002). Introductory circuits for electrical and computer engineering, Addison Wesley. Call Number: TK7867. N54 2002.

BEV20602 Mechanical Sciences

Synopsis:
This course shall introduce fundamental topics in mechanical engineering sciences that are related to electrical engineers in professional practice. Understanding fundamental areas of discussion in mechanical sciences is useful for electrical engineers especially in multi-disciplinary applications.

References:
1. Meriam, J. L, Engineering Mechanics 7th Edition, John Wiley. Call Number: TA350 .M47 2013.
2. Munson, Bruce R., (2013), Fluid Mechanics, 10th Edition, John Wiley. Call Number: TA357 .M86 2013.
3. Cengel, Yunus A., (2011), Thermodynamics: An Engineering Approach, 7th Edition, McGraw Hill. Call Number: TJ265 .C46, 2011.
4. Ashby, Michael F., Material selection in mechanical design, 9780081005996, 5th Ed, Elsevier Ltd., 2017, Call Number: TA403.6.A73, 2017.
5. Kalpakjian, Serope, Manufacturing engineering and technology, 7th Edition, 2014, 9789810694067, Call Number TS176. K34, 2014.

BEV20903 Power Generation, Transmission and Distribution

Synopsis:
The aim of this course is to provide students with a systematic understanding of the operation of a modern electrical power network which consists of the generation, transmission and distribution. The topics include various types of power generation technologies, a study of elements of transmission and distribution, the constants of transmission, the types of transmission system and the ac distribution.

References:
1. Charles K. Alexander, Matthew N. O. Sadiku, Fundamentals of Electric Circuits (5th Edition), McGraw-Hill 2013.
2. Hadi Saadat, Power System Analysis (3rd Edition), PSA Publishing 2010.
3. Leonard L.Grigby, Boca Raton Taylor and Francis, Electric Power Generations, Transmission and Distribution, 2007. Call number: TK1001.E43 2007.
4. Paul Breeze, Power Generation Technologies, Elsevier, 2005. Call number: TK1001.B74 2005.
5. Mohamed E. El-Hawary, Electrical Energy System, 2nd Ed., Taylor & Francis, 2007. Call number: TK1001.E36 2000 N1.

BEV20803 Electrical Machines

Synopsis:
This course is designed to give student a strong understanding of the fundamental principles of operation and characteristics of the following types of electrical machines – transformers, DC motors and generators, single-phase AC motor, three-phase AC motors, synchronous generators, special motors In this course the physical nature of electromagnetic phenomena in electrical machines is discussed on the basis of the respective mathematical apparatus and the main relationships from electrical machines theory are derived. Finally, some practical applications of electrical machines in electric power engineering and electric drives are explored.

References:

1. 1.Abdel Ghani Aissaoul, AHmed Tahour, Design and Control Methods for Electrical Machines. London: Auris,2018.[TK2000. A32 2018].
2. Zorbas,Dino : Electric Machines: Principles, Applications and Control Schematics, 2nd Ed.; Cengage, Australia,2015 [TK2000.Z67 2015].
3. Battacharya,S,K : Electrical Machine, 4th Ed. ; Tata McGraw-Hill, 2014 [TK2000. B42 2014]
4.]
5. Sen, P.C, John Wiley, Principles of Electric Machines and Power Electronics(3rd edition) [TK2000.S46 2014]
6. Chapman Stephen J., McGraw-Hill, Electric Machinery Fundamentals (5th Edition), [TK2000.C42 2012]
7. Hughes, Austin; Electric Motors And Drives: Fundamentals, Types And Applications, 4th Ed.; Oxford: Newnes, 2013. [TK2514 .H83 2013]
8. Gönen, Turan; Electrical Machines with MATLAB, 2nd Ed.; Boca Raton, FL: CRC Press, 2012 [TK2000. G66 2012]
9. Mohan, Ned; Electric Machines and Drives: A First Course; Hoboken, NJ: Wiley, 2012. [TK2000 .M63 2012]

BEV20901 Electrical Engineering Laboratory II

Synopsis:

This course is arranged to give the students approaches on laboratory works in electrical parameter measurement of AC and DC system, steady-state behaviour of RLC loads in series and parallel connections, electrical parameters of single and three phase transformers, star and delta connection of three phase AC system and induction and DC electric motors. Examples of experiments are transformer characteristic study, three phase circuit, steady-state behaviour of RLC series and parallel circuits, and characteristic test of induction motor and DC motor.

References:

1. Alexander (2009). Sadiku, Fundamentals of Electric Circuits, 3rd Ed., McGraw Hill. Call Number: TK454 .A43 2009.
2. Floyd, Thomas L. (2010). Electrical Circuits Fundamentals, NJ Pearson. Call Number: TK454 .F56 2010
3. Boylestad (2010). Introductory Circuit Analysis, 11th Edition, NJ Pearson. Call Number: TK454 .B69 2010.
4. James W. Nilsson, Susan A.Riedel (2008). Electric Circuits, 7th Ed., Upper Sadle River, NJ Pearson. Call Number: TK454 .N54 2008.
5. James W. Nilson, Susan A. Riedel (2002). Introductory circuits for electrical and computer engineering, Addison Wesley. Call Number: TK7867 .N54 2002.

BEV30103 Electronic Communication Systems

Synopsis:

This course introduces the fundamentals in analog and digital communication systems. Comprises of analysis of signals and noise, generation of analog and digital modulation schemes, transmission lines, antenna and wave propagation as a part of a complete system in communication. Finally, the topic discussed relate with current application in communication systems.

References:

1. Wayne Tomasi, Electronic Communication Systems: Fundamental Through Advanced 5th Ed., Pearson Prentice Hall, 2004. Call number: TK5101. T65 2004
2. Jeffrey S. Beasley, Gary M. Miller, Modern Electronic Communication 9th Ed., Pearson Prentice Hall 2008. Call number: TK5101 .B42 2008
3. Proakis, J. G., Salehi M., Communication System Engineering 2nd Ed, Pearson Prentice-Hall, 2002. Call number: TK5101. P75 2002 N1
4. Couch, L. W., Digital and Anolog Communication Systems, 7th Ed, Pearson Prentice-Hall, 2007. Call number: TK5101 .C68 2007
5. Louis Frenzel, Communication Electronics, McGraw-Hill, 2001. Call number: TK7816 .F67 2001 N8

6. Ziemer, R. E., et. al., Principles of Communciation, 5th Ed, John Wiley, 2010.

BEV30203 Power Electronics

Synopsis:
This subject discusses about the types of solid state switching components, the working of various types of converter circuits and the associated control circuits. It also touches on the principles of AC and DC motor speed control. The use of solid state components in handling high voltage DC is also dealt with. Lastly the applications of switching devices and examples in industry are being discussed.

References:
1. Mohan Ned, Undeland Tore M and Robbin William P, Power Electronics: Converters, Applications and Design, 3rd Edition, John Wiley, 2003. [TK7881.15 .M63 2003]
2. Rashid M.H, Power Electronics, Circuits, Devices and Applications, 3rd Edition, Prentice-Hall, 2004. [TK7881.15 .M5 2004]
3. Rashid M.H, SPICE for power electronics and electric power, 2nd Edition, Bota Raton, Taylor and Francis, 2006 [TK7881.15 .M83 2006]
4. Qing Chang Zhong, Control of power inverters in renewable energy and smart grid integration, John Willey, 2013 TK7872.C8 .Z46 2013
5. Rashid M.H, Alternative Energy in Power Electronics, Amsterdam: Butterworth-Heinemann, 2015, TK7881.15 .A47 2015

BEV30903 Power System Analysis

Synopsis:
This course discusses the fundamentals of analytical tools used to analyze the power system in various operating conditions. First, the course covers the modeling of power system components to represent the actual system response. The course covers the breadth and depth of various analytical tools such as power flow analysis, optimal dispatch of generation, balanced fault analysis, and power system stability to study the system response in steady-state and transient operating situations.

References:
1. Hadi Saadat, Power System Analysis (2th Edition), McGraw-Hill, 2004. Call number: TK1011.S33 2002
2. Arthur R. Bergen & Vijay Vittal, Power Systems Analysis (2th Edition), Pearson Prentice Hall, 2000. Call number: TK1001. B47 1986 N2, TK1001. B47 1986, TK1001 .B47 1986 N3
3. John J. Grainger & William D. Stevenson, Power System Analysis. McGraw-Hill, 2004. Call number: TK3001. G73 1994
4. Stephen J. Chapman, Electric Machinery and Power System Fundamentals, McGraw-Hill, 2002. Call number: TK2000.C462 2002

BEV30401 Power Engineering Laboratory I

Synopsis:
This course is a practical lab which is related to Power Electronics, Power System and Control System Theory. This course aims to prepare student with practical knowledge and skills in the electrical and electronic equipment's used in industry. It is important for students to be familiar with electrical and electronics equipment as a prior preparation to adapt related working environment.

References:
1. Timothy L. S, William E. D., Electrical Power and Controls, 2nd Edition; Prentice Hall, 2004.
2. Muhammad H. Rashid, Power Electronic Circuit, Devices and Applications, 3rd Edition; Prentice Hall, 2004.
3. E.Acha, V.G Agelidis, O. Anaya-Lara, T.J.E Millwer, Power Electronics Control in Electrical System Newnes, 2002
4. V.R. Moorthi, Power Electronics Devices, Circuits, and Industrial Applications, Oxford University Press, 2005
5. Ned Mohan, William P. Robbins, Tore M. Undeland, Power electronics: Converters, Applications and Design, John Wiley, 2003

BEV30503 Control Systems

Synopsis:
This course is about fundamental concepts of solving control systems problem. This course is organized in seven chapters. Chapter 1 presents an introduction to control systems. Chapter 2 provides introduction to Laplace transforms, transfer function, and mathematical modelling of dynamical systems (mechanical, electrical and electronic systems). Chapter 3 presents stability analysis of control systems and followed with chapter 4 which describes the time domain analysis of control systems. Chapter 5 and chapter 6 treats root locus method and frequency domain analysis respectively to analyze control systems while Chapter 7 deals with the basic properties of controllers including PID controller design.

Pre-requisite: BEE11203 Ordinary Differential Equations

References:

1. N. S. Nise. Control Systems Engineering, 6th Edition. John Wiley, 2011. Call number: TJ213. N57 2011
2. R. C. Dorf and R. H. Bishop. Modern Control Systems, 11th Edition. Prentice Hall, 2008. Call number: TJ216. D67 2008
3. F. M. Golnaraghi and B. C. Kuo. Automatic Control System, 9th Edition. John Wiley, 2010. Call number: TJ213 .K86 2010
4. M. Gopal. Control Systems: Principle and Design, 2nd Edition. Tata McGraw Hill, 2002. Call number: TJ213 .G66 2002
5. K. Ogata. Modern Control Engineering, 5th Edition, Prentice Hall, 2010. Call number: TJ213 .O32 2010

BEV30603 Digital Signal Processing

Synopsis:
This course aims is to introduce the main concepts of digital signal processing, review of discrete signal and system, characteristic and operation, discrete convolution, sampling and quantization, discrete Fourier transform, Z-transform and the implementation of digital filters.

Pre-requisite: BEV20203 Transform Circuit

References:

1. Digital Signal Processing: A modern Introduction, Ashok Ambardar, International Student Edition, Thomson, 2007. Call Number: TK5102.5.A43 2007
2. Digital Signal Processing: Principles, Algorithm and Applications, John G. Proakis, Dimitris G Manolakis, 4th Ed, Pearson Prentice Hall, 2007.
3. Analog and Digital Signal Processing, Ashok Ambardar, 2nd Ed, Thomson, 1999. Call Number: TK5102.9.A43 1999

BEV30703 Electric Drives

Synopsis:
This subject deals with the fundamental of electric drives and its applications in industries. It begin with the components involve in electric drives the way to chose the correct drives system. The various power electronics converters and the control schemes are also covered. Modern traction, solar and battery drives in electrical drives are delivered considering current and future needs of the industry. Lastly, the digital control implementation for electric drives system is taught in general.
References:

1. GK Dubey, Fundamental of Electrical Drives, 2nd Edition, Alpha Science Int. Ltd. 2001. Call Number: TK4058 .D83 2001

2. Theodore Wildi, Electrical Machines, Drives and Power Systems; Prentice Hall, 2006. Call number: TK2182 .W54 2006
3. B.K. Bose, Modern Power Electronics and AC Drives, Prentice Hall, 2002. Call Number: TK2781 .B67 2002
4. Mohamed A. E., Fundamentals of Electric Drives; Brooks/Cole Publishing, 2000. Call number: TK4058 .E74 2000 N3, TK4058 .E74 2000 N4, TK4058 .E74 2000 N5. TK4058 .E74 2000
5. Ion Boldea and S.A. Nasar, Electric Drives, 2nd Edition; Taylor & Francis, 2006. Call number: TK4058 .B64 2006
6. W. Leonhard, Control of Electrical Drives, Springer, 2001. Call Number: TK4058 .L46 2001
7. M.H. Rashid, Power Electronics: Circuits, Devices, and Applications, Prentice Hall 2006. Call Number: TK7881.15 .P67 2006
8. Slobodan N. Vukosavic, Digital Control of Electrical Drives, Springer, 2007. Call Number: TK4058 .V84 2007 \
9. Chee-Mun Ong, Dynamic Simulation of Electric Machinary Using Matlab/Simulink, Prentice Hall 1997. Call Number: TK2391 .O54 1998.

BEV30803 Utilisation of Electrical Energy

Synopsis:
This course deals with topics related to the utilisation of electrical energy: building distribution networks and electricity tariffs, building services, power factor and power quality issues, voltage drop and short circuit issues, building protections and illuminating engineering. In general, this course focuses on technical issues that relevant to the utilisation of electrical energy, which addresses areas concerning the power supply utilities, power equipment and protection systems applied in electrical installations.

References:
1. Hemant Joshi, Residential, Commercial and Industrial Electrical Systems (Vol. 3 – Protection, Testing and Commissioning), Tata McGraw-Hill Publishing Company Limited, 2008. Call Number: TK1001 .J67 2008 v.3.
2. Dugan, Roger C., Electrical Power Systems Quality, McGraw Hill, 2012. Call Number: TK1010 .E43 2012.
3. Karlen, Mark., Lighting Design Basics, Hoboken : Wiley , 2012. Call Number: TH7703 .K37 2012.
4. Gupta, J. B., Utilization of Electric Power and Electric Traction : A Course in Electrical Power, S. K. Kataria, 2004. Call Number: TK4001 .G86 2004.
5. Atkinson, Bill, Electrical Installation Designs (4th Edition), John Wiley & Sons, 2013. Call Number: TK3271 .A84 2013.
6. Hemant Joshi, Residential, Commercial and Industrial Electrical Systems (Vol. 1 – Equipment and Selection), Tata McGraw-Hill Publishing Company Limited, 2008. Call Number: TK1001 .J67 2008
7. Scaddan, Brian, Milton Park, Abingdon, Oxon, 17th edition IET wiring regulations: design and verification of electrical installations (8th Edition), New York : Routledge, 2013.
8. Steffen, Marcus, Residential lighting design; New York : Crowood, 2014.
9. Electricity Suppy Act 1990 (Act 447),Electricity Supply(Successor Company) Act 1990 (Act 448) & Regulations, International Law Book Services,2016.
10. TNB's Electricity Supply Application Handbook, 2007.

BEV30901 Power Engineering Laboratory II

Synopsis:
This course is arranged to teach students the practical aspects of electric drives, power system operations, and power system protection devices. Among the contents of the syllabus is the application of inverter to drive motor. This course is also focusing on the characteristic of overhead transmission lines under load and no load condition. Another major topic covered is various protection devices of the power system distribution network. Examples of experiments are air circuit breaker test, application of overcurrent and earth fault relay as well as induction motor acceleration control using an inverter.

References:

1. Shoaib Khan, Industrial Power Systems. CRC Press, 2008. Call number: TK1005 .K42 2007.
2. Ali Emadi, Energy-efficient Electric Motors, 3rd. Edition, Marcel Dekker, 2005. Call number: TK2511.E42 2005
3. R.B. Theodore. Electrical Systems Design, Prentice Hall, 2003. Call number: TK3101 .B67 2003
4. T.A. Short, Electric Power Distribution Equipment andSystems, Taylor & Francis Group, 2006. Call number: TK3091 .S56 2006
5. GK Dubey, Fundamental of Electrical Drives, 2nd Edition, Alpha Science Int. Ltd. 2001. Call Number: TK4058 .D83 2001
6. T. Wildi, Electrical Machines, Drives, and Power Systems, Prentice Hall, 2006. Call Number: TK2182 .W54 2006
7. B.K. Bose, Modern Power Electronics and AC Drives, Prentice Hall, 2002. Call Number: TK2781 .B67 2002
8. W. Leonhard, Control of Electrical Drives, Springer, 2001. Call Number: TK4058 .L46 2001
9. John J. Grainger & William D. Stevenson, Power System Analysis. McGraw-Hill, 2004. Call number: TK3001 .G73 1994

BEV40103 Power System Protection

Synopsis:

The course discusses the methodology required to provide necessary protection to the power system against abnormal operating conditions. First, the method to determine the appropriate instrument transformer rating for the protection system is discussed. Next, the fundamental of sequence components and the fault analysis technique are studied. Consequently, the course discusses the approach to determine the typical power system protection scheme, such as overcurrent, distance, and differential relay.

Pre-requisite: BEV20703 Power System Analysis

References:

1. Paul M. Anderson, Power System Protection, McGraw-Hill, 1999. Call number: TL1010.A63, 1999.
2. Ravindra P. Singh, Digital Power System Protection, Pearson Prentice Hall, 2007. Call number: TK1005.S617.S56, 2007.
3. Waldemar Rebizant, Digital Signal Processing in Power System Protection and Control. Springer, 2011. Call number: TK1005.R42, 2011.
4. Arun G. Phadke, Computer Relaying for Power Systems, John Wiley, 2009. Call number: TK2861.P42, 2009.
5. Stanley H. Horowitz, Power System Relaying, Wiley, 2008. Call number: TK2861.H67, 2008.

BEV40203 Industrial Power Systems

Synopsis:

Industrial Power Systems is a must-have course for anyone involved in power engineering, especially in the design and maintenance of power distribution systems. This course is arranged to furnish students' understanding of the utilisation of electrical energy in industrial applications. The industrial power distribution system generally represents a relatively small portion of the entire plant cost (5% to 10%), yet the production and output of the other 90% to 95% of plant investment is dependent on the service delivered by that investment in the power distribution system. Thus, it is vital for a power engineer to know the features and design procedures of industrial power systems, including basic plant planning, load estimation, instrument transformers, protective devices, power cables, power monitoring and control, as well as the energy management and control.

References:

1. Anton, Janssen. Switching in power transmission and distribution systems. Wiley, 2015. (Call number: TK2831.S94 2015).

2. Thorpe, Dave. Energy Management in Industry: the Earthscan expert guide. Earthscan expert series, 2014. (Call number: TJ163.3.T47 2014).
3. Anton, Janssen. Switching in Power Transmission and Distribution Systems, Wiley, 2015. (Call number: TK2831.S94 2015).
4. Dugan, Roger C. Electrical power systems quality (3rd. Edition). McGraw Hill, 2012. (Call number: TK1010 .E43 2012).
5. Baker, Thomas E. Electrical Calculations and Guidelines for Generating Stations and Industrial Plants. CRC Press, 2012. (Call number: TK1191.B34 2012).
6. Thollander, Patrik. Improving energy efficiency in industrial energy systems: an interdisciplinary perspective on barriers, energy audits, energy management, policies, and programs. Springer, 2013. (Call number: TJ163.3.T46 2013).
7. Nowakowski, Andrzej, Electric power transformer engineering. United Kingdom: Auris Reference, 2015. (Call number: TK2551 .E44 2015).

BEV40302 Power Engineering Laboratory III

Synopsis:

This course aims for a better understanding of the power factor correction under different load settings, relay settings for power system scheme, electrical machines that concern with the synchronous motor, adaptation of power electronic technology for loads control and relay testing.

References:

1. *Dale R. Patrick, Stephen W. Fardo, Brian W. Fardo, Electrical Power Systems Technology, River Publishers, 2022. [https://ebookcentral.proquest.com/lib/uthm-ebooks/detail.action?docID=29002966&query=electrical%20measurement]*

2. *Bhattacharyya, Mrittunjay, Electrical Machines Modelling & Analysis, PHI Learning Private Limited, 2016. Call Number: TK2411 .B421 2016*

3. *Gers, Juan M.; Holmes, Edward, Protection of Electricity Distribution Networks (4th Edition), Institution of Engineering and Technology, 2022. [https://app-knovel-com.ezproxy.uthm.edu.my/kn/resources/kpPEDNE024/toc?b-content-type=book&b-q=relays&date_facets=%7B%21ex%3Dc%7Dcopyright_sort%3A%5B2020%20TO%202024%5D&facet_expanded=date&include_synonyms=no&q=relays&sort_on=default]*

4. *Austin Hughes, Bill Drury , Electric Motors and Drives - Fundamentals, Types and Applications (5th Edition), Elsevier, 2019. [https://app-knovel-com.ezproxy.uthm.edu.my/kn/resources/kpEMDFTA11/toc?b-content-type=book&b-q=DC%20motors&include_synonyms=no&q=DC%20motors&sort_on=default]*

5. *Deng, Xu; Mecrow, Barrie, Integrated Motor Drives, Institution of Engineering and Technology, 2022. [https://app-knovel-com.ezproxy.uthm.edu.my/kn/resources/kpIMD00001/toc?b-content-type=book&b-q=electric%20machines&date_facets=%7B%21ex%3Dc%7Dcopyright_sort%3A%5B2020%20TO%202024*5D&facet_expanded=date&include_synonyms=no&q=electric%20machines&sort_on=default]

6. *Sivaraman Palanisamy, Sharmeela Chenniappan, A. Thaiyal Nayagi, R. Mahendran, Basic Electrical and Instrumentation Engineering, John Wiley & Sons, Incorporated, 2021. [https://ebookcentral.proquest.com/lib/uthm-ebooks/detail.action?docID=6423295&query=electric%20circuit]*

BEV40403 High Voltage Engineering

Synopsis:

The demand for the generation and transmission of large amount of electric power today, necessitates in transmission at extra-high voltages. At this juncture, a practising electrical engineer or a student of electrical engineering is expected to possess knowledge of techniques and should have sufficient background in high voltage engineering. This subject provides all the information on insulating materials, breakdown phenomena, overvoltages and testing techniques. Generation and measurements of various

kinds of high voltages are also introduced.

References:

1. Vasily Ya. Ushakov , Alexey V. Mytnikov , Ikromjon U. Rakhmonov, High-Voltage Equipment of Power Systems, Springer 2023.
2. Dale R. Patrick, Stephen W. Fardo, and Brian W. Fardo. Electrical Power Systems Technology, River Publishers, 2022, eBook ISBN: 9788770226653.
3. Zark Bedalov. Practical Power Plant Engineering : A Guide for Early Career Engineers, John Wiley & Sons, Incorporated, 2020, eBook ISBN: 9781119534983.
4. Benallou, Abdelhanine. Energy Transfers by Conduction, John Wiley & Sons, Incorporated, 2018.
5. Tapan Kumar Saha and Prithwiraj Purkait (2017), Transformer Ageing : Monitoring and Estimation Techniques, First Edition, Wiley. Call number: TK2551 .T74 2018
6. UHV Transmission Technology, edited by Electric Power Research Institute China, and Electric Power Research Institute Staff China, Elsevier Science & Technology, 2017
7. Haddad & Warne, Advance in High Voltage Engineering, IET Power and Energy Series, 2004. Call number: TK153 .A38 2004
8. M. S. Naidu & V. Kamaraju, High Voltage Engineering, McGraw-Hill, 2004. Call number: TK3001.N34 2004
9. Subir Ray, An Introduction to High Voltage Engineering, Prentice Hall India, 2004. Call number: TK153 .R39 2004
10. Dieter Kind, Kurt Feser, High Voltage Test Techniques, Oxford: Newnes, 2001. Call number: TK147 .K56 2001
11. E. Kuffel, W. S. Zaengl & J. Kuffel, High Voltage Engineering: Fundamentals, Newnes, 2000. Call number: TK153 .K83 2000
12. .

BEV40502 Instrumentation for Process Control

Synopsis:
This course provides the fundamental aspects and knowledge on the process control and its instrumentation. It is aimed at making the process more efficient by eliminating human error. Topics covered include sensors and control valves, control signal transmission, programmable logic controllers, industrial communication systems and instrumentation safety.

References:

1. Curtis D. Johnson, Process Control Instrumentation Technology, Pearson, 2006. Call number: TS156.8 .J63 2006
2. William C. Dunn, Introduction to Instrumentation, Sensors and Process Control, Artech House, 2006. Call number: TS156.8 .D86 2006
3. William C. Dunn, Fundamentals of Industrial Instrumentation and Process Control, McGraw-Hill, 2005. Call number: TA156 .D86 2005
4. Tony R. Kuphaldt, Lessons in Industrial Instrumentation, Creative Conmons, 2012
5. Process Control Professionals, Fundamentals of Instrumentation and Process Control, Control Station, Inc., 2005.
6. Douglas O. J. Desa, Instrumentation Fundamentals for Process Control, Taylor and Francis, 2001. TP155.75 .D24 2001
7. Thomas A Hughes, Measurement and Control Basics, ISA,2007. TS.156.8.H83 2007

BEV40603 Power Quality

Synopsis:
This subject introduces power quality (PQ) issues and problems as they relate to electric power transmission and distribution systems. This course will provide students with overall understanding of the PQ problems and how they interact with the system. In addition, possible measures to solve the PQ problems will also be discussed in this course.

Pre-requisite: BEV30203 Power Electronics

References:

1. *Editor(s): P. Sanjeevikumar, C. Sharmeela, Jens Bo Holm-Nielsen, P. Sivaraman, Power Quality in Modern Power Systems, Academic Press, 2021, ISBN 9780128233467, https://doi.org/10.1016/B978-0-12-823346-7.05001-5. (https://www.sciencedirect.com/science/article/pii/B9780128233467050015)*
2. *Santoso, Surya, Mark F. McGranaghan, Roger C. Dugan, and H. Wayne Beaty. 2012. Electrical Power Systems Quality. 3rd ed. https://www-accessengineeringlibrary-com.ezproxy.uthm.edu.my/content/book/9780071761550*
3. *C. Sankaran, Power Quality, CRC Press, 2002.*
4. *Kusko, Alexander. 2007. Power Quality in Electrical Systems. 1st ed. New York: McGraw-Hill. https://www-accessengineeringlibrary-com.ezproxy.uthm.edu.my/content/book/9780071470759.*
5. *Bhim Singh, Ambrish Chandra, Kamal Al-Haddad, Power Quality "Problems and Mitigation Techniques", Wiley, 2015.*
6. *Ewald F. Fuchs, Mohammad A.S. Masoum, Power Quality in Power Systems, Electrical Machines, and Power-Electronic Drives (Third Edition), Academic Press, 2023, ISBN 9780128178560, https://doi.org/10.1016/B978-0-12-817856-0.09988-X. (https://www.sciencedirect.com/science/article/pii/B978012817856009988X)*

BEV40702 Power Engineering Laboratory IV

Synopsis:
The course is designed for electrical power engineering student approaching the end of their undergraduate studies. The contents of the lab instructions are designed to be open-ended in order to coach students to explore the suitable solution for various engineering problems. The contents of this course focus on various practical problems in the vital niche areas of the power system engineering such as power system stability, domestic wiring, high voltage and motor design.

References:

1. "SimPowerSystems: or Use with Simulink," TheMathWorks, Inc., Massachusetts, 2003.
2. R. D. Zimmerman and C. E. Murillo-Sanchez, "Matpower 5.1: User's Manual," PowerSystems Engineering Research Center (PSERC), New York, 2015.
3. P. Kundur, "PowerSystemStability and Control," McGraw- HillEducation, New York, 1994.
4. AUTOCAD 2010 Official Training Guide, Autodesk, Inc., USA,2009
5. B. Atkinson, R. Lovegrove and G. Gundry, Electrical Installation Designs, Wiley, UK, 2013.
6. David Meeker. Finite Element Method Magnetics User's Manual Version 4.2, 2020.
7. K. B. Baltzis, "The FEMM Package: A Simple, Fast, and Accurate Open Source Electromagnetic Tool in Science and Engineering" Journal of Engineering Science and Technology Review, Vol. 1, pp. 83-89, Nov 2008.
8. G. Meunier, "The Finite Element Method for Electromagnetic Modeling", John Wiley & Sons, Jan 2010.
9. Mahboub Baccouch. Finite Element Methods and Their Applications, IntechOpen 2021, eBook ISBN 9781839623561.
10. B. Atkinson, R. Lovegrove and G. Gundry, Electrical Installation Designs, Wiley, UK, 2013.
11. D. Meeker, "Finite Element Method Magnetics Version 4.2 User's Manual", QinetiQ North America, Waltham, MA, Oct 2010.
12. K. B. Baltzis, "The FEMM Package: A Simple, Fast, and Accurate Open Source Electromagnetic Tool in Science and Engineering" Journal of Engineering Science and Technology Review, Vol. 1,
13. pp. 83-89, Nov 2008.
14. G. Meunier, "The Finite Element Method for Electromagnetic Modeling", John Wiley & Sons, Jan 2010.
15. O.C. Zienkiewicz, R.L. Taylor, J.Z. Zhu, "The Finite Element Method: Its Basis and Fundamentals: Its Basis and Fundamentals" Butterworth-Heinemann, May 2005.
16. J. Pedro, A. Bastos, N. Sadowski, "Electromagnetic Modeling by Finite Element Methods, CRC Press, Apr 2003

BEE32205 Industrial Training

Synopsis:

The course aims to provide an opportunity for students to undergo practical in working sector especially engineering field, technology and management as well as to enhance professional skills and interpersonal skills.

Pre-requisite: Student must complete minimum 83 credits

References:

1. Garis Panduan Latihan Industri Pelajar (Program Sarjana Muda dan Diploma), Universiti Tun Hussein Onn Malaysia, Edisi Kelima 2021
2. Manual Pengguna Sistem Pengurusan Latihan Industri (e-LI), PTM UTHM, versi 5.0

BEE40602 Final Year Project I

Synopsis:

This course is the first part of an individual project during final year of study based on a topic selected from the subjects studied or a related engineering problem. Each student is expected to present his proposal and research in addition to a progress report during the first seminar of the final year project.

Pre-requisite: Student must complete minimum 95 credits

References:

1. Guidelines for the Implementation of Final Year Project in the Faculty of Electrical and Electronics Engineering UTHM.
2. Guidelines for thesis writing.
3. A guide to technical report writing, The Institution of Engineering and Technology (IET).
4. Final year project, The Institution of Engineering and Technology (IET).

BEE40704 Final Year Project II

Synopsis:
This course is the second part of an individual project during final year of study based on a topic selected from the subjects studied or a related engineering problem. Each student is expected to present result of his/her final year project.

Pre-requisite: BEE40602 Final Year Project I

References:

1. Guidelines for the Implementation of Final Year Project in the Faculty of Electrical and Electronics Engineering UTHM.
2. UTHM Guidelines for Thesis Writing.
3. A guide to technical report writing, The Institution of Engineering and Technology (IET) Final year project, The Institution of Engineering and Technology (IET).

BEE32603 Integrated Design Project

Synopsis:
This course introduces students with the principles of integrated electrical and electronic engineering design project based on a topic selected from the courses studied or a related engineering problem. It involves teamwork, project management, engineering design, and technical presentation in a team environment. Each team is expected to address problem statement, in-depth survey, design, analysis, evaluation and revision of design towards engineering problem solution. The students also must ensure that the designed project meets specified needs with appropriate consideration for public health and safety, cultural, societal, project management, economy, and environmental.

Pre-requisite: Student must complete minimum 95 credits

References:

1. Kosky, Philip Balmer, Robert Keat, William Wise, George. (2021). Exploring Engineering - An Introduction to Engineering and Design (5th Edition). Elsevier. Retrieved from
https://app.knovel.com/hotlink/toc/id:kpEEAIED01/exploring-engineering/exploring-engineering
2. Kerzner, Harold. (2022). Project Management - A Systems Approach to Planning, Scheduling, and Controlling (13th Edition). John Wiley & Sons. Retrieved from
https://app.knovel.com/hotlink/toc/id:kpPMASAP05/project-management-systems/project-management-systems
3. Project Management Institute. (2024). Standard for Program Management (5th Edition). Project Management Institute, Inc. (PMI). Retrieved from
https://app.knovel.com/hotlink/toc/id:kpSPME0041/standard-program-management/standard-program-management
4. Safety and Health Guideline, Department of Occupational Safety and Health (DOSH), . Retrieved September 9, 2024, from https://www.dosh.gov.my/index.php/legislation/guidelines
5. Jayakumar, V. Razak, Khairunisak Abdul. (2024). Engineering Systems, Equipment and Robotics. Trans Tech Publications. Retrieved from
https://app.knovel.com/hotlink/toc/id:kpESER0003/engineering-systems-equipment/engineering-systems-equipment
6. Jain, Vishal Chatterjee, Jyotir Moy Kumar, Pradeep Kose, Utku. (2022). Healthcare Monitoring and Data Analysis Using IoT - Technologies and Applications. Institution of Engineering and Technology (The IET). Retrieved from
https://app.knovel.com/hotlink/toc/id:kpHMDAUITK/healthcare-monitoring/healthcare-monitoring
7. Westcott, Sean Westcott, Jean Riescher. (2023). Basic Electronics - Theory and Practice (4th Edition). Mercury Learning and Information. Retrieved from
https://app.knovel.com/hotlink/toc/id:kpBETP0001/basic-electronics-theory/basic-electronics-theory

SYNOPSIS OF ELECTIVE COURSES

BEV40503 Instrumentation for Process Control

Synopsis:
This course provides the fundamental aspects and knowledge on the process control and its instrumentation. It is aimed at making the process more efficient by eliminating human error. Topics covered include sensors and control valves, control signal transmission, programmable logic controllers, industrial communication systems and instrumentation safety.

References:

1. Curtis D. Johnson, Process Control Instrumentation Technology, Pearson, 2006. Call number: TS156.8 .J63 2006.
2. William C. Dunn, Introduction to Instrumentation, Sensors and Process Control, Artech House, 2006. Call number: TS156.8 .D86 2006
3. William C. Dunn, Fundamentals of Industrial Instrumentation and Process Control, McGraw-Hill, 2005. Call number: TA156.D86 2005
4. Tony R. Kuphaldt, Lessons in Industrial Instrumentation, Creative Conmons, 2012
5. Process Control Professionals, Fundamentals of Instrumentation and Process Control, Control Station, Inc., 2005.
6. Douglas O. J. Desa, Instrumentation Fundamentals for Process Control, Taylor and Francis, 2001. TP155.75 .D24 2001
7. Thomas A Hughes, Measurement and Control Basics, ISA,2007. TS.156.8.H83 2007.

BEE41403 Electric Vehicles

Synopsis:
This course introduces the fundamental concepts, principles, components and control of electric vehicles. This course goes deeper into the various aspects of the electric drive train, such as the technologies, configuration, types of electric machines, energy storage devices, and electric vehicle control. Each topic is developed in logical progression with the latest information.

References:

1Haifeng Dai and Jiangong, Advances in Lithium-Ion Batteries for Electric Vehicles, 2024 Elsevier (https://doi.org/10.1016/C2022-0-01751-7)

Per Enge, Nick Enge and Stephen Zoepf, Electric Vehicle Engineering, 1st Edition, 2021 McGraw Hill. (https://www-accessengineeringlibrary-com.ezproxy.uthm.edu.my/content/book/9781260464078/chapter/chapter6#/c9781260464078ch06lev1sec03)

Sivaraman Palanisamy, Sharmeela Chenniappan, Sanjeevikumar Padnnanaban, Fast Charging Infrastructure for Electric and Hybrid Electric Vehicles: Methods for Large Scale Penetration into Electric Distribution Networks, John Wiley & Son, 2023 (Call number: TL221.15 .P34 2023)

Xi Zhang, Chong Zhu, Haito Song, Wireless Power Transfer Technologies for Electric Vehicles, Huazhong University of Science and Technology Press, 2022 (Call number: TK3091 .X59 2022)

Francis M. Vanek, Louis D. Albright, Largus T. Angenent, Michael W. Ellis, D.David A. Dillard, Energy Systems Engineering: Evaluation and Implementation, 4th Edition, 2022 McGraw Hill, (https://www-accessengineeringlibrary-com.ezproxy.uthm.edu.my/content/book/9781260456400/toc-chapter/chapter15/section/section15)

BEE41503 Photovoltaic Systems

Synopsis:
The course has been designed to introduce the technology of solar photovoltaic engineering and grid-connected photovoltaic (GCPV) system design. The main topic of this course consists of basic solar engineering, photovoltaic technology, GCPV system design, performance evaluation, operation and maintainance. The GCPV design software and related national and international standards are also discussed in this course.

References:

1. Fundamentals of Solar Cells and Photovoltaic Systems Engineering. https://www-sciencedirect-com.ezproxy.uthm.edu.my/book/9780323961059/fundamentals-of-solar-cells-and-photovoltaic-systems-engineering#book-info. 2024.
2. Photovoltaic Solar Energy Conversion - Technologies, Applications and Environmental Impacts. https://www-sciencedirect-com.ezproxy.uthm.edu.my/book/9780128196106/photovoltaic-solar-energy-conversion. 2020.
3. Advances in Grid-Connected Photovoltaic Power Conversion Systems. https://www-sciencedirect-com.ezproxy.uthm.edu.my/book/9780081023396/advances-in-grid-connected-photovoltaic-power-conversion-systems. 2019.
4. Fundamentals and Applications of Renewable Energy. https://www-accessengineeringlibrary-com.ezproxy.uthm.edu.my/content/book/9781265079659/toc-chapter/chapter3/section/section10. 2023.

BEE41103 HCIA Routing and Switching

Synopsis:

Huawei (HCIA) Routing & Switching: network fundamentals, Ethernet, various protocols such as those used in routing, and Huawei's own VRP operating system that covers all essential aspects of HCIA certification. Presenting routing and switching basics in depth, it is a valuable resource for information and communications technology (ICT) practitioners, university students and network technologist.

References:

1. Huawei Technologies Co. Ltd, HCNA Networking Study Guide, Springer, 2016
2. W.Stallings, High Speed Networking, TCP/IP and ATM Design Principles, Prentice Hall, 1998
3. W. Stallings, Data and Computer Communications, 5e, Prentice Hall, 1997
4. B. Sklar, Digital Communications: Fundamentals and Applications, Prentice Hall, 1988
5. Nalin K.Sharda, Multimedia Information Networking, Prentice Hall, 1999

BEE41203 HCIA Cloud Computing

Synopsis:

Huawei HCIA-Cloud Computing course is aimed at introducing the basic of cloud computing, as well as how to use virtualization technology to realize the basic characteristics of cloud computing. This course covers the introduction of Cloud Computing and virtualization, storage, network in Cloud Computing, virtualization features and development trend of Cloud Computing, which are valuable resources for information and communications technology (ICT) practitioners, university students and network technologist.

References:

1. Huawei Technologies Co. Ltd, HCNA Networking Study Guide, Springer, 2016
2. Jiongjiong Gu, Cloud Computing Architecture: Technologies and Practice, 2021.
3. Lei Zhang and Le Chen, Cloud Data Center Network Architectures and Technologies, 2021.
4. Dan C. Marinescu, Cloud Computing: Theory and Practice, Call Number : QA76.585 .M37 2013.
5. Jamsa, Kris A, Cloud Computing: SaaS, PaaS, IaaS, Virtualization, Business Models, Mobile, Security and More, Call Number : QA76.585 .J35 2013.

BEE41303 HCIA Artificial Intelligence

Synopsis:

Huawei HCIA-AI course is aimed to introduce the basic of artificial intelligence (AI), as well as understand the AI development history. This course covers the AI, Machine Learning and Deep

Learning overview, mainstream development framework for AI, Huawei AI development framework, Huawei AI Computing Platform, Huawei AI platform for smart devices and Huawei Cloud Enterprise Intelligence application platform. This course contents are valuable resources for those who are interested in learning how to build and manage AI for commercial needs, ICT practitioners, university students and network technologist.

References:

1. Huawei Technologies Co. Ltd, HCNA Networking Study Guide, Springer, 2016
2. Xiaoyao Liang, Ascend AI Processor Architecture and Programming: Principles and Applications of CANN, 2020
3. Zhiyuan Chen, Bing Liu, Lifelong Machine Learning: Second Edition, 2018
4. Mahrishi, Mehul, et al., editors. Machine Learning and Deep Learning in Real-Time Applications. IGI Global, 2020. https://doi-org.ezproxy.uthm.edu.my/10.4018/978-1-7998-3095-5
5. Baby Maruthi, Puvvadi, et al., editors. Machine Learning Algorithms Using Scikit and TensorFlow Environments. IGI Global, 2024. https://doi-org.ezproxy.uthm.edu.my/10.4018/978-1-6684-8531-6

EEF40103 Introduction to Big Data

Synopsis:

Big Data is a term used to describe a collection of data that is huge in size and yet growing exponentially with time. In short, such data is so large and complex that none of the traditional data management tools are able to store it or process it efficiently. This course provides knowledge on how to handle and manage big data.

References:

1. Chu, Wesley W Data Mining and Knowledge discovery for big data: methodologies, challenge and opportunities. Berlin, Heidelberg: Springer 2014. Call Number: QA76.9.D379 2014
2. Reiss, Rolf D. Statistical of extreme values: with applications to insurance, finance, hydrology and other fields. Basel: Birkhauser Call Number: QA273.6.R44 2007.
3. Little, Roderick J.A. Statistical analysis with missing data. Hoboken, NJ: John Wiley, 2002 Call Number: QA276. L57 2002
4. Liu, Shen Computation and statistical methods for analysing big data with applications. London: Academic Press, 2015 Call Number: QA76.9.C66 2015
5. Voss, Jochen An introduction to statistical computing: a simulation-based approach, Chichester, West Sussex: Wiley 2014 Call Number: QA276.4. V67 2014

EIF40103 Machine Learning

Synopsis:

An introduction to machine learning theories and algorithms. Topics include supervised Learning (artificial neural networks, support vector machines) and unsupervised learning (clustering, dimensionality reduction).

References:

1. Lee meng Wei. (2019). Python Machine Learning. Wiley.
2. Mohri Mehryar, Afshin Rostamizadeh, and Ameet Talwalkar. (2018). Foundations of Machine Learning. The MIT Press
3. Andreas C. Müller & Sarah Guido. (2016) Introduction to Machine Learning with Python: A Guide for Data Scientists. O'Reilly Media
4. Shalev-Shwartz S., Ben-David S. (2014). Understanding Machine Learning: From Theory to Algorithms. Cambridge University Press.
5. Christopher M. Bishop. (2011). Pattern Recognition and Machine Learning. Springer

EWF40103 Data Science and Applications

Synopsis:

In this course, student will learn how to leverage on data to unlock new economic value for your business, as well as apply useful data science concepts to every aspect of your daily life from personal finances, to reading, lifestyle habits, and work decisions. This course will combine a good balance of theoretical knowledge and practical application where students will learn the processes of gathering, cleaning and handling data and learning big data concepts by using case study references to reinforce learning.

References:

1. Kelleher, J. D. & Tierney, B. (2018). Data Science. The MIT Press, USA. ISBN: 9780262535434.
2. Baumer, R. B. Kaplan, D., & Horton, N. (2017). Modern Data Science with R. Chapman and Hall/CRC Press: Florida, USA. ISBN 9781498724487.
3. Igual, L. & Seui, S. (2017). Introduction to Data Science: A Python Approach to Concepts, Techniques and Applications. Springer Nature, Cham, Switzerland. ISBN: 9783319500164.
4. EMC Education Services. (2015). Data Science & Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data. John Wiley & Sons, Inc., ISBN: 9781118876138.
5. Grus, J. (2015). Data Science from Scratch: First Principles with Python. O'Reilly Media Inc., Sebastopol, Canada. ISBN: 9781491901427.
6. O'Neil, C. & Schutt, R. (2013). Doing Data Science. O'Reilly Media, Inc., Sebastopol, Canada. ISBN: 9781449358655.
7. Huang, M.L. 2014. Innovative Approaches of Data Visualization and Visual Analytics. Hershey: Information Science Reference. (QA76.9.I52 2014).
8. Information Dashboard Design: Displaying Data for At-a-Glance Monitoring Stephen Few, O'Reilly Media (2013).

EWF40203 Data Visualisation

Synopsis:

Data visualisation is the graphical representation of information using visual elements like charts, graphs, maps, dashboard and etc. Data visualisation tools such as Tableau and Microsoft Power BI provides an accessible way to see and understand trends, outliers, forecast and patterns in data.

References:

1. Dzemyda, G. 2013. Multidimensional data visualization: methods and applications. New York: Springer. (TK7881.16 . D93 2013)
2. Yau, N. (2011). Visualize This: The FlowingData Guide to Design, Visualization, and Statistics. Indianapolis: O'Reilly
3. Few, S. (2012). Show me the numbers: Designing tables and graphs to enlighten. Burlingame, CA: Analytics Press.
4. Huang, M.L. 2014. Innovative Approaches of Data Visualization and Visual Analytics. Hershey: Information Science Reference. (QA76.9 .I52 2014)
5. Information Dashboard Design: Displaying Data for At-a-Glance Monitoring Stephen Few, O'Reilly Media (2013)

EEF40203 Energy Literacy

Synopsis:

This course offers a comprehensive exploration of energy literacy, focusing on key topics that will equip students with essential knowledge and skills for understanding and managing energy in a sustainable way. The course covers a wide range of topics from the basics of energy systems to the latest developments in renewable energy and energy management. Students will be encouraged to

take an active role in managing energy in their daily lives and share this knowledge with others, becoming energy-literate consumers.

References:

1. Patrik Thollander, Magnus Karlsson, Patrik Rohdin, Johan Wollin, Jakob Rosenqvist, Introduction to Industrial Energy Efficiency, Academic Press, 2020, "Introduction to Industrial Energy Efficiency Energy Auditing, Energy Management, and Policy Issues". https://www-sciencedirect-com.ezproxy.uthm.edu.my/book/9780128172476/introduction-to-industrial-energy-efficiency#book-info
2. Mirjana Radovanović, Sustainable Energy Management - Planning, Implementation, Control, and Security (Second Edition), Academic Press, 2023, https://www-sciencedirect-com.ezproxy.uthm.edu.my/book/9780128210864/sustainable-energy-management
3. Mirjana Golušin, Siniša Dodić, Stevan Popov, Sustainable Energy Management, Academic Press, 2013, https://www-sciencedirect-com.ezproxy.uthm.edu.my/book/9780124159785/sustainable-energy-management
4. Kanoğlu, Mehmet, Yunus A. Çengel, and John M. Cimbala. 2023. Fundamentals and Applications of Renewable Energy. 2nd ed. New York: McGraw Hill. https://www-accessengineeringlibrary-com.ezproxy.uthm.edu.my/content/book/9781265079659
5. Kanoğlu, Mehmet, and Yunus A. Çengel. 2020. Energy Efficiency and Management for Engineers. 1st ed. New York: McGraw-Hill Education. https://www-accessengineeringlibrary-com.ezproxy.uthm.edu.my/content/book/9781260459098

UQU40103 Professional@Work

Synopsis:

This course helps students develop technical skills in professionalism, social responsibility, and environmental sustainability. The course covers professional practice, ethics, law, innovation, social responsibility, and the work environment. It is based on Sustainable Development Goals (SDGs) and PESTEL (Political, Economic, Social, Technological, Environmental, and Legal) guidelines. Students will also implement a community service project addressing local issues that promote professional practices.

References:

1. Lydia E. Anderson & Sandra B. Bolt (2016). Professionalism : skills for workplace success. Pearson, c2013 ISBN 9780132624664
2. Department of Economic and Social Affairs, United Nation (2019). Handbook for th preparation of valuntary national reviews.
3. Purohit, S. S. (2008). Green technology : an approach for sustainable environment. ISBN: 9788177543438, [S494.5.S86 .P87 2008].
4. Russ, Tom (2010). Sustainability and design ethics. ISBN: 9781439808542 [TA157 .R87 2010]
5. Yoe, Charles (2012). Principles of risk analysis : decision making under uncertainty. ISBN: 9781439857496 [T57.95 .Y63 2012].

SYNOPSIS OF MASTER INTEGRATION COURSES

MEE10103 Advanced Engineering Mathematics

Synopsis:
Root finding of nonlinear system, solution of the linear systems, multivariate approximation, optimization and forecasting in engineering.

References:

1. Tay, K. G, Kek, S. L & Abdul Kahar, R. (2013). Numerical Methods with Excel. Penerbit UTHM, Batu Pahat.
2. Tay, K.G. & Abdul Kahar, R. (2011). Advanced Engineering Mathematics. 3rd Edition. Penerbit UTHM, Batu Pahat.
3. Tay, K. G, Kek, S. L & Abdul Kahar, R. (2011). Numerical Methods with Casio ES PLUS Calcculator. Penerbit UTHM, Batu Pahat.
4. Chapra, S. C. and Canale, R. P. (2009). Numerical Methods for Engineers. Sixth edition. Mc Graw Hill, New York.
5. Gen, M, Cheng, R.(2000). Genetic Algorithms and Engineering Optimization.Japan: John Wiley & Son, Inc.
6. Clerc, M. (2006). Particle Swarm Optimization. USA: ISTE Ltd.

MEE10203 Programmable Electronics

Synopsis:
The course introduces the digital hardware design concepts and the modelling using HDL to synthesize of digital circuits using Programmable Logic Technology. Students will expose to the state of the art of Programmable Logic Technology. Students also learn the development, synthesis and modelling of Combinational Circuits, Sequential Circuit, Finite State Machine, RTL design and the testing approaches on the circuits.

References:

1. Roth Jr, Charles H. (2016). Digital systems design using Verilog, Boston: Cengage Learning. [TK7888.3.R67 2016]
2. Wilson, Peter. (2016). Design recipes for FPGAs : using Verilog and VHDL /Peter Wilson, Newnes, Elsevier. [TK7895.G36 .W57 2016]
3. Botros, Nazeih.(2015). HDL with digital design: VHDL and Verilog, Mercury Learning and Information. [TK7885.7 .B67 2015]
4. Mehler, Ronald (2015). Digital integrated circuit design using Verilog and system Verilog, Elsevier. [TK7874.65 .M43 2015]
5. Brown, Stephen. (2014). Fundamentals of digital logic with Verilog design, McGraw-Hill Higher Education. [TK7868.L6 .B76 2014]

MEE10303 Advanced Digital Signal Processing

Synopsis:
This subject is to introduce the advance concepts in digital signal processing, to demonstrate its applications and implementation constraints and introducing the real-time DSP using MATLAB tools.

References:

1. Analog and Digital Signal Processing, Ashok Ambardar, 2nd Ed, brooks/Cole, 1999.
2. Discrete-Time Signal Processing, Alan V. Oppenheim, Ronald W. Schafer, 2nd Ed, Prentice Hall, 1999.
3. Random Signals for Engineers Using MATLAB and Mathcad, Richard C. Jaffe, A Springer, 2000.
4. Digital Signal Processing: Principles, Algorithm and Applications, John G. Proakis, Dimitris G. Manolakis, 3rd Ed, Prentice Hall, 1996.
5. Digital Signal Processing and Statistical Classification, George J. Miao, Mark A. Clements, Artech Housing Publishers, 2002.
6. Digital Signal Processing with Examples in MATLAB®, Second Edition (Electrical Engineering & Applied Signal Processing Series) 2nd Edition, Samuel D. Stearns, Donald R. Hush, CRC Press, 2011.

MEE10403 Computational Intelligence

Synopsis:
Neural Network Fundamentals; Mathematical Foundations; Supervised Learning NN Model; Backpropagation Algorithm; Unsupervised Learning Model NN; Competitive Networks; Grosberg Networks; Classical set and Fuzzy.

References:

1. Analog and Digital Signal Processing, Ashok Ambardar, 2nd Ed, brooks/Cole, 1999.
2. Discrete-Time Signal Processing, Alan V. Oppenheim, Ronald W. Schafer, 2nd Ed, Prentice Hall, 1999.
3. Random Signals for Engineers Using MATLAB and Mathcad, Richard C. Jaffe, A Springer, 2000.
4. Digital Signal Processing: Principles, Algorithm and Applications, John G. Proakis, Dimitris G. Manolakis, 3rd Ed, Prentice Hall, 1996.
5. Digital Signal Processing and Statistical Classification, George J. Miao, Mark A. Clements, Artech Housing Publishers, 2002.
6. Digital Signal Processing with Examples in MATLAB®, Second Edition (Electrical Engineering & Applied Signal Processing Series) 2nd Edition, Samuel D. Stearns, Donald R. Hush, CRC Press, 2011.

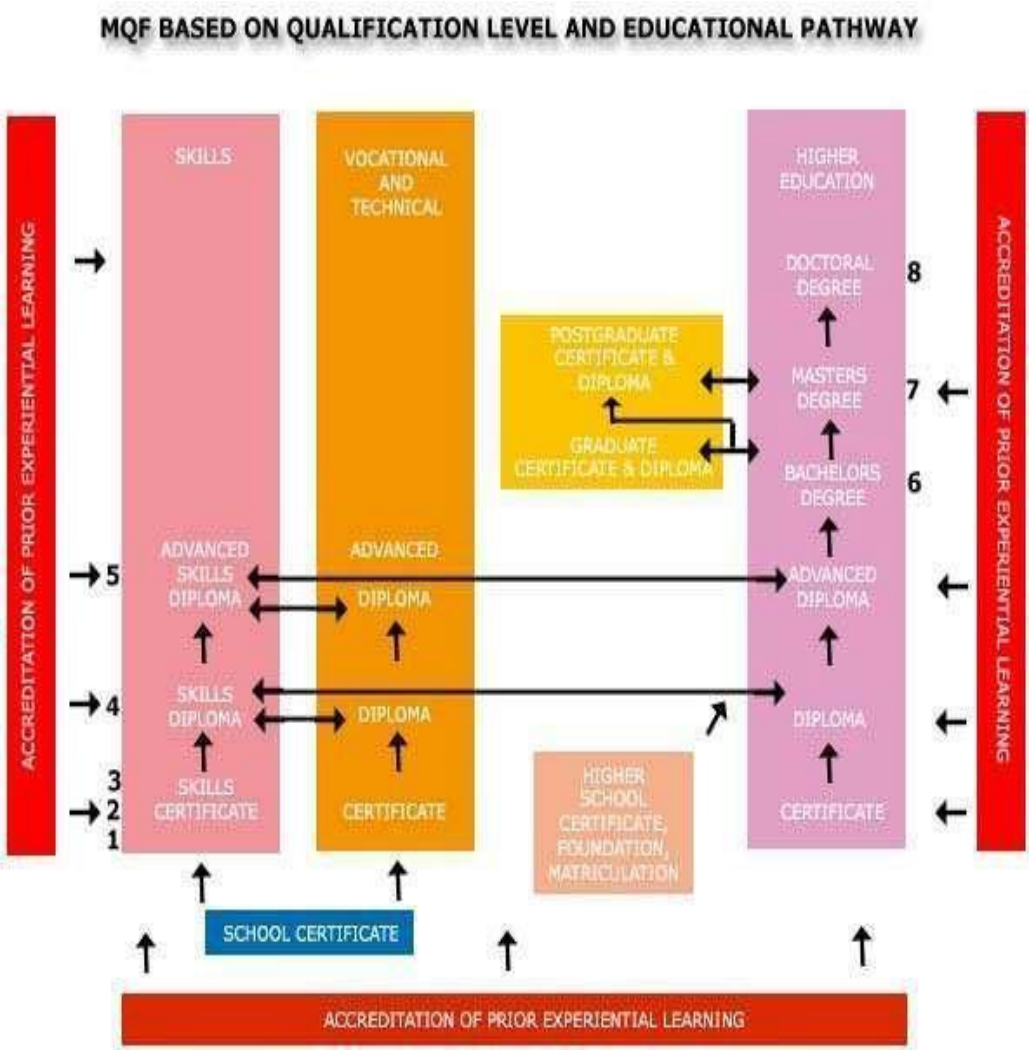
MEE10603 Advanced Power Electronics

Synopsis:
This subject will discuss a review of electrical fundamentals of power electronics devices concepts of PWM modulation techniques apply in power semiconductor switches. The student also will be discussed in details about Diode Rectifiers, Thyristor-Based Rectifiers, DC to DC Converters, DC to AC Converters, AC to AC Converters in three phase system. As at the end, utility Applications of Power Electronics in alternative energy application.

References:

1. Mohan Ned, Undeland Tore M and Robbin William P, Power Electronics: Converters, Applications and Design, 3rd Edition, John Wiley, 2003. [TK7881.15 .M63 2003]
2. Rashid M.H, Power Electronics, Circuits, Devices and Applications, 3rd Edition, Prentice-Hall, 2004. [TK7881.15 .M5 2004]
3. Rashid M.H, SPICE for power electronics and electric power, 2nd Edition, Bota Raton, Taylor and Francis, 2006 [TK7881.15 .M83 2006]
4. Qing Chang Zhong, Control of power inverters in renewable energy and smart grid integration, John Willey, 2013 TK7872.C8 .Z46 2013
5. Rashid M.H, Alternative Energy in Power Electronics, Amsterdam : Butterworth-Heinemann, 2015, TK7881.15 .A47 2015
6. Chanson, H. (2004). The Hydraulics of Open Channel Flow: An Introduction. Amsterdam: Elsevier. [TC175 .C42 2004]
7. Digital Signal Processing with Examples in MATLAB®, Second Edition (Electrical Engineering & Applied Signal Processing Series) 2nd Edition, Samuel D. Stearns, Donald R. Hush, CRC Press, 2011.

Further Education Pathway
(Source from Malaysian Qualification Framework)



MALAYSIAN QUALIFICATIONS FRAMEWORK: QUALIFICATIONS AND LEVELS

MQF Levels	Sectors			Lifelong Learning
	Skills	Vocational and Technical	Higher Education	
8			Doctoral Degree	Accreditation of Prior Experiential Learning (APEL)
7			Masters Degree	
			Postgraduate Certificate & Diploma	
6			Bachelors Degree	
			Graduate Certificate & Diploma	
5	Advanced Diploma	Advanced Diploma	Advanced Diploma	
4	Diploma	Diploma	Diploma	
3	Skills Certificate 3	Vocational and Technical Certificate	Certificate	
2	Skills Certificate 2			
1	Skills Certificate 1			

Disclaimer:

This is a revised Faculty of Electrical and Electronic Engineering Proforma Bachelor of Electrical Engineering with Honours as of 1st September 2024 FKEE



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