

ACADEMIC PROFORMA 2023/2024

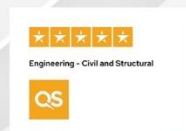
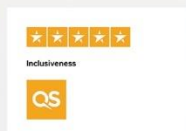
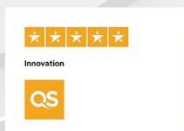
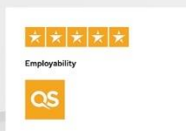
FACULTY OF
ELECTRICAL & ELECTRONIC ENGINEERING
UNIVERSITI TUN HUSSEIN ONN MALAYSIA
86400, PARIT RAJA, BATU PAHAT, JOHOR



BACHELOR OF ELECTRICAL ENGINEERING WITH HONOURS



Universiti Tun Hussein
Onn Malaysia
Is Rated as a Five-Star Institution



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Universiti Tun Hussein Onn Malaysia
July 2023

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Foreword from Vice Chancellor



Assalamualaikum Warahmatullahi Wabarakatuh and greetings.

I would like to begin by extending my congratulations and a warm welcome to all the new students at UTHM. As each of you embarks on your formal education journey, you have chosen us as a significant milestone, and I am truly honoured by your trust and commitment.

Speaking about the pressure of intertwined economic, social, and sustainability (ESG) during the post-endemic era, changes are imminent. As an academic institution, we not only recognise the significance of these interconnected dimensions but also wholeheartedly embrace the responsibility to contribute to their advancement actively. We are firmly committed to strengthening our main pillar of business by focusing on various crucial aspects.

Firstly, we prioritise enhancing our academic delivery to ensure that our students receive the highest quality education in a rapidly evolving world. By continuously refining our curriculum, integrating innovative teaching methods, and nurturing critical thinking skills, we aim to empower our students with the knowledge and capabilities needed to address complex societal challenges. Secondly, we place great emphasis on research efforts that contribute to the broader goal of sustainability. By fostering a culture of interdisciplinary collaboration, we seek to generate groundbreaking research and innovative solutions that address pressing economic, social, and environmental issues. Our aim is to make meaningful contributions to the sustainable development of our local and global communities.

Furthermore, we actively seek to enrich our services by engaging with various stakeholders. Through partnerships, community outreach programs, and knowledge exchange initiatives, we aim to create a positive impact beyond the confines of our institution. By leveraging our expertise and resources, we aspire to address societal needs and promote inclusive growth and well-being. Lastly, all our endeavours are underpinned by a commitment to good governance. We strive to uphold the highest standards of transparency, accountability, and ethical practices. By promoting responsible decision-making and fostering a culture of integrity, we aim to create an environment that nurtures trust, fosters collaboration, and ensures the long-term sustainability of our institution.

In summary, we are dedicated to pursuing dynamically synergistic sustainability by strengthening our main pillar of business, encompassing academic delivery, research efforts, and services enrichment, and supported by our unwavering commitment to good governance. We believe that by embracing these principles, we can actively contribute to shaping a more sustainable and resilient future for all.

Lastly, but certainly not of lesser importance, I wholeheartedly extend a warm welcome to all new students, inviting you to become valued members of our community. As you embark on this transformative journey, I am dedicated to ensuring that your experiences are enriching and enjoyable. Furthermore, I earnestly pray for your success in all endeavours as you navigate through this educational path.

“With Wisdom, We Explore”

Best wishes.

YBHG. PROFESSOR Ir. Ts. Dr. RUZAIRI BIN ABDUL RAHIM

Vice-Chancellor

Universiti Tun Hussein Onn Malaysia

Foreword from Deputy Vice Chancellor (Academic and International)



Assalamualaikum Warahmatullahi Wabarakatuh and greetings.

First and foremost, I would like to extend my heartfelt congratulations and a warm welcome to all new students joining Universiti Tun Hussein Onn Malaysia (UTHM) for the academic session 2023/2024. Rest assured, we possess unique qualities and offerings that set us apart from others. I assure you that we are fully committed to upholding our promises and ensuring that you have an exceptional educational experience. You can trust in our unwavering

dedication to your success, and we will strive tirelessly to exceed your expectations.

Secondly, I would like to express my gratitude and extend congratulations to the Centre for Academic Development and Excellence (CAD) and the faculties for the successful publication of this academic proforma. It is indeed a valuable resource that provides concise information about the various programs offered. This proforma serves as a guiding tool for students, assisting them in planning their learning journey effectively. By providing essential details and insights, it enables students to make informed decisions and navigate their educational path with clarity.

As we focused on the nation's academic matters, recent initiatives by the Ministry of Higher Education Malaysia (MoHE), such as enhancing current academic infrastructures and infostructures, including digitalisation, have taken place. The move was to ensure that conduciveness, safety, efficiency, and quality education will be achieved - without sacrificing innovativeness, flexibility, and globalisation needs.

Additionally, to ensure sustainability in terms of students' interest and enrolment, several bold actions, namely; hybrid programmes and shortening the duration of study have been introduced. Therefore, as an institution under MoHE, please expect our changes towards those positive programs. On the other hand - for ourselves, we remain agile and dedicated to advocating the Technical and Vocational Education and Training (TVET) based academics and gradually headed for a global technopreneur university by 2030.

Within our capacity and per micro-perspective, lest we forget to enhance, strengthen, and upholding very own programmes and human capital. All of our programmes (specifically 107 in number) have been accredited by the Malaysian Qualification Agency (MQA) and their respective professional bodies. These are achieved through our qualified staff (academic and non-academic), which continuously undergo upskilling and reskilling from time to time.

In conclusion, my sincere wish is for the agendas implemented by UTHM to provide you with invaluable experiences for the exploration and acquisition of competencies. Beginning with this proforma, I envision remarkable academic achievements and success for each of you. This juncture marks a significant turning point where you can make a positive impact on our nation, and perhaps even the global community at large.

Best wishes.

PROFESSOR TS. DR. AZME BIN KHAMIS

Deputy Vice Chancellor (Academic and International)

Universiti Tun Hussein Onn Malaysia

Foreword from Dean FKEE



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 best equipped engineering faculties with excellent teaching and research facilities. Currently, more than 1400 students from all over Malaysia and other countries are enrolled in our undergraduate and postgraduate programs.

The teaching and learning in the Faculty are supported by 143 academic staff, 34 assistant engineers, and 13 administrative staff. On top of that, all our academic programs are accredited by the Malaysian Qualifications Agency (MQA) and the Engineering Accreditation Council (EAC).

Everyone involved with FKEE is united by a common desire to make the world a better place by emphasizing the philosophy of "to learn and improve" as well as "giving is the best communication." In this Faculty, it is not simply about electrical and electronic engineering, it is about becoming a well-rounded person who will benefit society.

This booklet highlights important information on the Bachelor of Electrical Engineering with Honours program (BEV) and courses to be enrolled throughout your study in FKEE. Remember, success is a journey, not a destination. In this journey, you will be surrounded by a conducive, positive, and exciting environment as a whole.

To enhance your experience, you should also utilize our modern laboratories to develop practical and hands-on skills and apply concepts and theories.

In brief, this is your journey, your opportunity. Give your very best swing and appreciate your learning curve with us.

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

ASSOC. PROF. 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 the 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 the University

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YBhg. Dato' Sri Ibrahim bin Ahmad

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Vice-Chancellor, Universiti Tun Hussein Onn Malaysia

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Ministry of Finance Malaysia

YB. Dato' (Dr.) Haji Nooh bin Gadot
Advisor, Johor Islamic Religious Council

YBrs. Prof. Dr. Yusri bin Yusof
Professor, Universiti Tun Hussein Onn Malaysia

YBrs. Mr. Shahril Anwar Mohd Yunos
Managing Partner, Virtus Capital Partners Sdn Bhd

YBrs. Mdm. Elain Lockman
Chief Executive Officer and Co-Founder, Ata Plus Sdn. Bhd.

YBhg. Dato' Dr. Mohd. Padzil bin Hashim
Putra Business School, Universiti Putra Malaysia

YBrs. Ir. Ts. Abdul Rahman Bahasa
Chief Executive Officer, Recove Group

YBhg. Datuk Md Jais bin Haji Sarday
Board Member, Universiti Tun Hussein Onn Malaysia

Alternate Member

YBrs. En. Mat Hassan bin Ibrahim
Director, Bahagian Penguatkuasaan dan Inspektorat, Ministry of Higher Education

Secretary

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

Members of Senate

Chairman

YBhg. Prof. Ir. Ts. Dr. Ruzairi Bin Abdul Rahim

Vice Chancellor

Members

Prof. Ts. Dr. Azme bin Khamis

Deputy Vice Chancellor (Academic and International)

Prof. Ts. Dr. Rabiah Binti Ahmad

Deputy Vice Chancellor (Research and Innovation)

Prof. Sr. Ts. Dr. Lokman Hakim bin Ismail

Deputy Vice Chancellor (Student Affairs and Alumni)

Prof. Ts. Dr. Mohd Kamarulzaki bin Mustafa

Provost UTHM Pagoh Branch Campus

Prof. Ir. Dr. Md Saidin Bin Wahab

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

Prof. Dr. Mas Fawzi bin Mohd Ali

Assistant Vice Chancellor (Strategic and Quality)

Prof. Dr. Shahrudin bin Mahzan @ Mohd Zin

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Prof. Ir. Ts. Dr. Mohd Irwan bin Juki

Dean, Faculty of Civil Engineering and Built Environment

Assoc. Prof. Ts. Dr. Asmarashid Bin Ponniran

Dean, Faculty of Electrical and Electronic Engineering

Prof. Ts. Dr. Amir Bin Khalid

Dean, Faculty of Mechanical and Manufacturing Engineering

Assoc. Prof. Dr. Shafie Bin Mohamed Zabri

Dean, Faculty of Technology Management and Business

Prof. Ts. Dr. Abdul Rasid bin Abdul Razzaq

Dean, Faculty of Technical and Vocational Education

Ts. Dr. Azizul Azhar bin Ramli

Dean, Faculty of Computer Science and Information Technology

Assoc. Prof. Dr. Mohamad Zaky Bin Noh

Dean, Faculty of Applied Science and Technology

Assoc. Prof. Ts. Dr. Jumadi bin Abdul Sukor

Dean, Faculty of Engineering Technology

Ts. Dr. Mohd Shahir Bin Yahya

Dean, Centre for Diploma Studies

Dr. Lutfan Jaes

Dean, Centre for General Studies and Co-curricular

Dr. Hj. Azmi Bin Abdul Latiff

Dean, Centre for Language Studies

Assoc. Prof. Dr. Rosli Bin Omar

Director, Centre for Academic Development and Excellence

Prof. Emeritus Dr. Jailani bin Md Yunos

Director, Malaysia Research Institute for Vocational Education and Training

Assoc. Prof. Dr. Amran Bin Harun

Institute for Social Transformation and Regional Development (TRANSFORM)

Prof. Dr. Noridah Binti Mohamad

Faculty of Civil Engineering and Built Environment

Prof. Ts. Dr. Aeslina Binti Abdul Kadir

Faculty of Civil Engineering and Built Environment

Prof. Ts. Norzila Othman

Faculty of Civil Engineering and Built Environment

Prof. Dr. Mohammad Faiz Liew bin Abdullah

Faculty of Electrical and Electronic Engineering

Prof. Dr. Nafarizal Nayan

Faculty of Electrical and Electronic Engineering

Prof. Dr. Yusri bin Yusof

Faculty of Mechanical and Manufacturing Engineering

Prof. Dr. Zawati Binti Harun

Faculty of Mechanical and Manufacturing Engineering

Prof. Dr. Abdul Talib bin Bon

Faculty of Technology Management and Business

Prof. Sr. Dr. Wan Zahari Wan Yusof

Faculty of Technology Management and Business

Prof. Ts. Dr. Alina Shamsuddin

Faculty of Technology Management and Business

Prof. Ts. Dr. Ishak Baba

Faculty of Technical and Vocational Education

Prof. Ts. Dr. Rosziati Binti Ibrahim

Faculty of Computer Science and Information Technology

Prof. Dr. Rozaida Ghazali

Faculty of Computer Science and Information Technology

Prof. Ts. Dr. Zaidi Embong
Faculty of Applied Sciences and Technology

Prof. Dr. Abdul Mutalib Bin Leman
Faculty of Engineering Technology

Prof. Dr. Chan Chee Ming
Faculty of Engineering Technology

Ir. Ts. Dr. Raha Binti Abd Rahman
Felo Industry

Prof. Dr. Nazri Bin Mohd Naw
Director Centre Information Technology

Ir. Ts. Dr. Raha Binti Abd Rahman
Felo Industry

Mr. Naim Bin Maslan
Registrar / Chief Operating Officer (COO) / Secretary of Senate

Mr. Norzaimi Bin Hamisan
Bursar / Chief Financial Officer (CFO)

Mdm. Zaharah Binti Abd Samad
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.

Mission

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 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 Electrical Engineering (JKEK)
2. Department of Electronic Engineering (JKEN)
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)

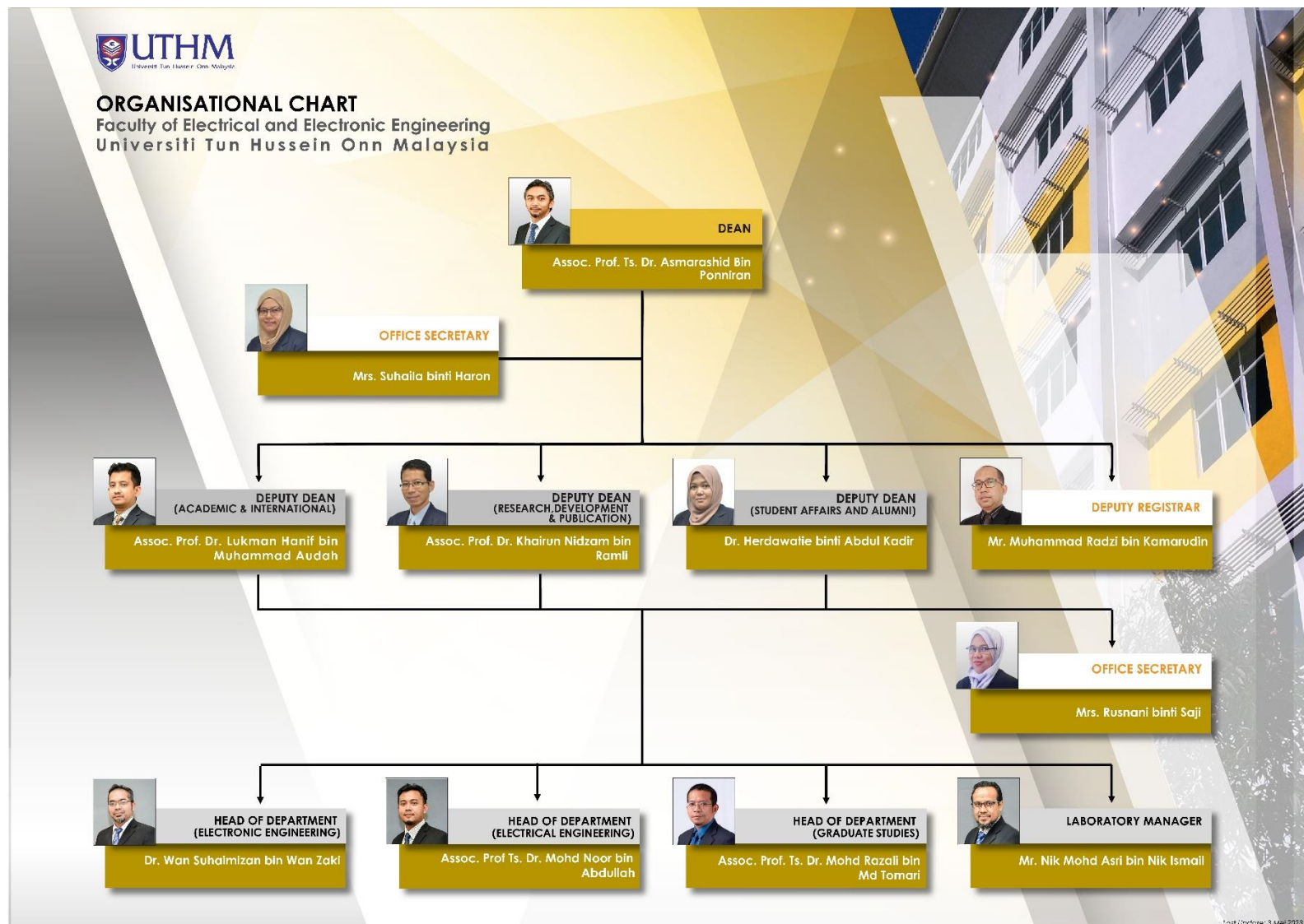
Currently, there are various focus groups that play pivotal role towards research culture establishment in FKEE. The list includes the following:

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. BioMedical Engineering and Measurement System (BioMEMS)
12. VLSI and Embedded System Technology (VEST)
13. Advanced Medical Imaging and Optics (AdMedic)
14. Advanced Sensing Device and Technology (ASDT)
15. Optical Communication and Artificial Intelligence (OCAI)
16. RF and Microwave Devices (RFMD)
17. 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 Electrical Engineering with Honours (BEV)
2. Bachelor of Electronic Engineering with Honours (BEJ)
3. Master in Electrical Engineering (Coursework) (MEE)
4. Master in Electrical Engineering (Research) (KEE)
5. Master of Science Internet of Things (Coursework) (MET)
6. Doctor of Philosophy in Electrical Engineering (PEE)

ORGANIZATIONAL CHART



CERTIFICATE OF ACCREDITATION
BACHELOR OF ELECTRICAL ENGINEERING WITH HONOURS

<p>No. Sijil: 1340 BEM/EAD/02-8/WA/03 (003)</p>	
 LEMBAGA JURUTERA MALAYSIA <i>(Penandatanganan Penuh Washington Accord mulai 18 Jun 2009)</i> SIJIL AKREDITASI DENGAN INI MEMPERAKUKAN BAHAWA KURSUS PENGAJIAN BACHELOR OF ELECTRICAL ENGINEERING WITH HONOURS <i>(4-Year Programme after STPM)</i> 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
<p><i>Penganugerahan Perakuan Akreditasi ini tertakluk kepada peraturan-peraturan dan syarat-syarat yang dinyatakan di sebelah.</i></p>	
<p>Tarikh Perakuan Dikeluarkan: 17.04.2019</p>	

EXTERNAL VISITORS

Adjunct Professor

Dr. Ahmad Kamsani Bin Samingan
Telekom R&D Sdn. Bhd.

Visiting Professor

Prof. Ir. Ts. Dr. Mohd Rizal bin Arshad
Universiti Sains Malaysia (USM)

External Examiner

Prof. Ir. Dr. Mohd Zainal Abidin bin Abdul Kadir
Universiti Putra Malaysia (UPM)

Industrial Advisory Panel

Datuk Ir. Mohd Tajudin bin Romli
TRMS Engineering Sdn. Bhd.

Ir. Dr. Aizam bin Talib
TNB Research Sdn. Bhd.

STAFF DIRECTORY

Administration

Dean

Associate Professor Ts. Dr. Asmarashid bin Ponniran
PhD (Power Electronics) (Nagaoka University of Technology)
MEng (Electrical Power) (UTM)
BEng (Electrical) (KUiTTHO)

Deputy Dean (Academic and International)

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)

Deputy Dean (Research, Development and Publication)

Associate Professor Ts. Dr. Mohd Razali bin Tomari
PhD (Computer Vision and Robotic) (Saitama University)
MSc (Intelligent System) (UPM)
BEng (Electrical– Mechatronic) (UTM)

Deputy Dean (Student Affairs and Alumni)

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Head, Department of Electrical Engineering

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BEng (Electrical) (UTM)

Head, Department of Electronic Engineering

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MSc (Electronic) (UPM)
BEng (Electronic - Medical) (UTM)

Acting Head, Department of Postgraduate Studies

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PhD (Biomedical Engineering) (UTM)
BEng (Biomedical Engineering) (UTM)

Laboratory Manager

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MEng (Electrical Engineering) (UTHM)
BEng (Hons.) (Electrical & Electronic) (UiTM)

Senior Assistant Registrar

Mr. Muhammad Radzi Bin Kamarudin
BSc (Human Development) UPM

Office Secretary

Mdm. Suhaila binti Haron

Office Secretary

Mdm. Rusnani binti Saji

Assistant Registrar Officer

Mr. Dzulfitry Ameen Bin Iskandar

Senior Assistant Administrative Officer

Mr. Hashim bin Hamdan

Senior Deputy Administrative Officer

Mr. Nazri Bin Mohd Suhud

Senior Administrative Assistant

Mdm. Saemah binti Ariffin

Senior Administrative Assistant

Mdm. Siti Hajar binti Sulaiman

Administrative Assistant

Mdm. Nurulnadia binti Ghadzali

Senior Assistant Administrative Officer

Ms. Nurulhuda binti Md Sharif

Administrative Assistant

Ms. Nur Shahila binti Salim

Senior Administrative Assistant

Mr. Muhammad Ariff bin Md Ngadiran

Operational Assistant

Mr. Hasri Suhaimi bin Karmon

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Head of Department

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MEng (Electrical Power) (UTM)

BEng (Electrical) (UTM)

Associate Professor Ts. Dr. Asmarashid bin Ponniran

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)

BEng (Electrical) (Universitas Bung Hatta)

Associate Professor Ts. Dr. Kok Boon Ching

PhD (Electrical Engineering) (UTM)

MEng (Electrical) (UTM)

BEng (Electrical) (UTM)

Associate Professor Dr. Shamsul Aizam bin Zulkifli

PhD (Electrical Engineering) (Loughborough University)

MEng (Electrical Power) (UPM)

BEng (Electrical & Electronics) (UPM)

Associate Professor Dr. Wahyu Mulyo Utomo

PhD (Electrical Engineering) (UTM)

MEng (Electrical) (Institut Teknologi Sepuluh Nopember)

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Associate Professor Ir. Dr. Rahisham bin Abd Rahman

PhD (High Voltage Engineering) (Cardiff University)

BEng (Electrical & Electronic) (Cardiff University)

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PhD (Electrical Power Engineering) (University of Queensland)

MEng (Electrical Power) (UTM)

BEng (Electrical) (UTM)

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Ph.D (High Voltage Engineering) (University of Queensland)

MEng (Electrical Power) (UTM)

BEng (Electrical) (UTM)

Associate Professor Ir. Dr. Nor Akmal binti Mohd Jamail

PhD (Electrical Engineering) (UTM)

MEng (Electrical) (UTHM)

BEng (Electrical) (UTM)

Dr. Afarulrazi bin Abu Bakar

PhD (Electrical Engineering) (UTHM)

MEng (Electrical) (UTHM)

BEng (Electrical) (UiTM)

Ts. Dr. Ahmad Fateh bin Mohamad Nor

PhD (Electrical Power Engineering) (UTeM)

MEng (Electrical Power Engineering) (UTeM)

BEng (Electrical-Power Electronic and Drive) (UTeM)

Dr. Jabbar Al-Fattah bin Yahaya

PhD (Electrical Power Engineering) (UNITEN)

MEng (UM)

BEng (Electronic-Telecommunication) (University of Leeds)

Dr. Khairul Anuar bin Mohamad

PhD (Electronic Engineering) (Muroran Institute of Technology)

MEng (Microelectronic) (University of Newcastle Upon Tyne)

BEng (Electronic) (University of Electro-Communications)

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PhD (Electrical Engineering) (UTHM)

MEng (Electrical) (UTHM)

BEng (Electrical) (UTM)

Dr. Md Zarafi bin Ahmad

PhD (Electrical Engineering) (UTHM)

MEng (Electrical-Power) (UTM)

BEng (Electrical) (UiTM)

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PhD (Electrical Engineering) (Imperial College London)

MEng (Electrical Power) (UTM)

BEng (Electrical) (UTM)

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MEng (Electrical) (UTM)

BEng (Electrical - Telecommunication) (UTM)

Dr. Nordiana Azlin binti Othman

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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. Siti Amely Binti Jumaat

PhD (Electrical Engineering) (UiTM)

MEng (Electrical Power) (UTM)

BEng (Mechatronic) (KUiTTHO)

Ts. Dr. Syed Zahurul Islam

PhD (Electrical Engineering) (UPM)

MEng (Electrical) (UNITEN)

BEng (Computer Science and Engineering) (University of Dhaka)

Dr. Mimi Faisylini Ramli

PhD (Electrical & Electronics Engineering) (University of Manchester)

MEng (Electrical & Electronic Engineering) (UTM)

BEng (Electrical & Electronic Engineering) (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)

Dr. Abba Lawan Bukar

PhD (Electrical Engineering) (UTM)

MEng (Electrical Power System) (UTM)

BEng (Electrical) (UNIMAID)

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)

Professor Dr. Mohammad Faiz Liew bin Abdullah

PhD (Electrical Engineering) (University of Warwick)

MEng (Electrical) (UTM)

BEng (Electrical) (UTM)

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 Dr. Fauziahanim binti Che Seman

PhD (Electrical Engineering) (Queen's University of Belfast)

MEng (Electrical - Communication) (KUiTTTHO)

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) (KUiTTTHO)

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. Tay Kim Gaik

PhD (Mathematics) (UTM)

Master (Mathematics) (UTM)

Bachelor (Mathematics) (UTM)

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)

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) (KUiTTTHO)

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 & Communication) (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)

Associate Professor Dr. Xavier Ngu Toh Ik

PhD (Electrical Engineering) (University of Nottingham)

BEng (Electrical) (KUiTTTHO)

Dr. Yee See Khee

PhD (Electrical Engineering) (UTHM)

MEng (Electrical) (UTHM)

BEng (Electrical) (KUiTTTHO)

Dr. Elfarizanis binti Baharudin

PhD (Wireless Communication Engineering) (UPM)

MEng (Communication and Computer) (UKM)

BEng (Electrical) (UiTM)

Mr. Aizan bin Ubin

MEng (Electrical) (KUiTTTHO)

BEng (Electrical) (Univ. of Toledo, Ohio)

Mdm. Nurulhuda binti Ismail

MEng (Electrical) (UTHM)

BEng (Electrical) (UiTM)

Ts. Sharifah binti Saon

MEng (Electrical) (KUiTTTHO)

BSc (Electrical) (KUiTTTHO)

Specialisation Area: Computer Engineering (BEC)

Associate Professor Ir. Dr. Abd Kadir bin Mahamad

PhD (Electrical Engineering and Computer Science) (Kumamoto University)

MEng (Electrical) (KUiTTTHO)

BEng (Computer Technology) (KUiTTTHO)

Associate Professor Dr. Afandi bin Ahmad

PhD (Electronics & Computer Engineering) (Brunel University)

MSc (Microelectronic) (UKM)

BEng (Electrical) (KUiTTTHO)

Associate Professor 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)

Dr. Chessda Uttraphan a/I Eh Kan

PhD (Electrical Engineering) (UTM)
MEng (Electrical) (KUiTTHO)
BEng (Electrical) (UTM)

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. Nor Surayahani binti Suriani

PhD (Electrical, Electronic & System Engineering) (UKM)

MEng (Electrical – Electronics & Telecommunication) (UTM)
BEng (Computer Engineering) (UPM)

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) (KUiTTTHO)

Dr. Siti Idzura binti Yusuf

PhD (Computer and Communication System) (UPM)
MEng (Electrical Engineering) (KUiTTTHO)
MEdu (Technical & Vocational Education) (KUiTTTHO)
BEng (Electrical) (KUiTTTHO)

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) (KUiTTTHO)

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) (KUiTTTHO)

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 ()(University)

MSc () (M)

BEng (ic) (UTM)

Associate Professor Ir. Dr. Chia Kim Seng

PhD (Electrical Engineering) (UTM)

BEng (Electrical – Instrumentation & Control) (UTM)

Dr. Abu Ubaidah bin Shamsudin

PhD (Robotics) (Tohoku University)

MEng (Mechatronic) (UIA)

BEng (Electrical & Electronic) (UTHM)

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. Herdawatie binti Abdul Kadir

PhD (Control and Robotic) (USM)

MEng (Electrical - Mechatronic) (UTM)

BEng (Electrical) (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 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)

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)

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. 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 Siti Hawa binti Ruslan

MEng (Electrical) (UTM)

BSc (Electrical) (University of Miami Coral Gables)

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. Marlia binti Morsin

PhD (Micro Engineering & Nano Electronic) (UKM)
MEng (Electrical) (KUiTTTHO)
BEng (Computer Engineering) (UTM)

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) (KUiTTTHO)
BEng (Electrical and Electronic) (UKM)

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)

Dr. Ashok Vajravelu

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

Mdm. Rosnah binti Mohd Zain

MEng (Electrical) (KUiTTTHO)
BEng (Electrical) (UTM)

Specialisation Area: Medical Electronic Engineering (BEU)

Associate Professor Dr. Audrey Huong Kah Ching

PhD (Biomedical Optics and Imaging) (University of Nottingham)
BEng (Medical Electronic) (KUiTTTHO)

Professor Ts. Dr. Muhammad Mahadi bin Abdul Jamil

PhD (Electronic Engineering - Medical) (University of Bradford)
BEng (Medical Engineering) (University of Bradford)

Associate Professor 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)

Ir. Dr. Farhanahani binti Mahmud

PhD Engineering (Biomechanical Science & Bioengineering) (Osaka University)

BEng (Electric & Electronic Engineering) (Toyama 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) (KUiTTTHO)

Dr. Nur Anida binti Jumadi

PhD (Electrical & Electronic Engineering) (UKM)

MSc (Electrical) (Queen Mary University of London)

BEng (Electrical) (KUiTTTHO)

Dr. Nur Ilyani binti Ramli

PhD (Electronic Engineering - Medical) (University of Bradford)

BEng (Electrical and Electronic) (Leeds Metropolitan University)

Dr. Nurmiza binti Othman

PhD (Electrical and Electronic Engineering) (Kyushu University)

MEng (Electrical and Electronic) (Utsunomiya University)

BEng (Electrical and Electronic) (Utsunomiya 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)

Laboratory Manager

Mr. Nik Mohd Asri bin Nik Ismail

MEng (Electrical) (UTHM)

BEng (Electrical) (UiTM)

Mr. Ezri bin Mohd

MEng (Electrical) (UTHM)

BEng (Telecommunication) (UTM)

Dr. Mohd Fadzli bin Abd Shaib

PhD (Electrical) (UTM)

MEng (Electrical) (UTM)

BEng (Electrical & Electronics) (UNITEN)

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)

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 Madijah

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)

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)

Mdm. Mr. Sahalan bin Yasin

Cert. (Electronic Communication Engineering) (Poli. Sultan Hj. Ahmad Shah)

Mdm. Saniah binti Suluki

Cert. (Electronic Communication) (Poli. Sarawak)

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 137 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 worthwhile 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 Ts. Dr. Mohd Noor bin Abdullah

☎ +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 multidisciplinary 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)

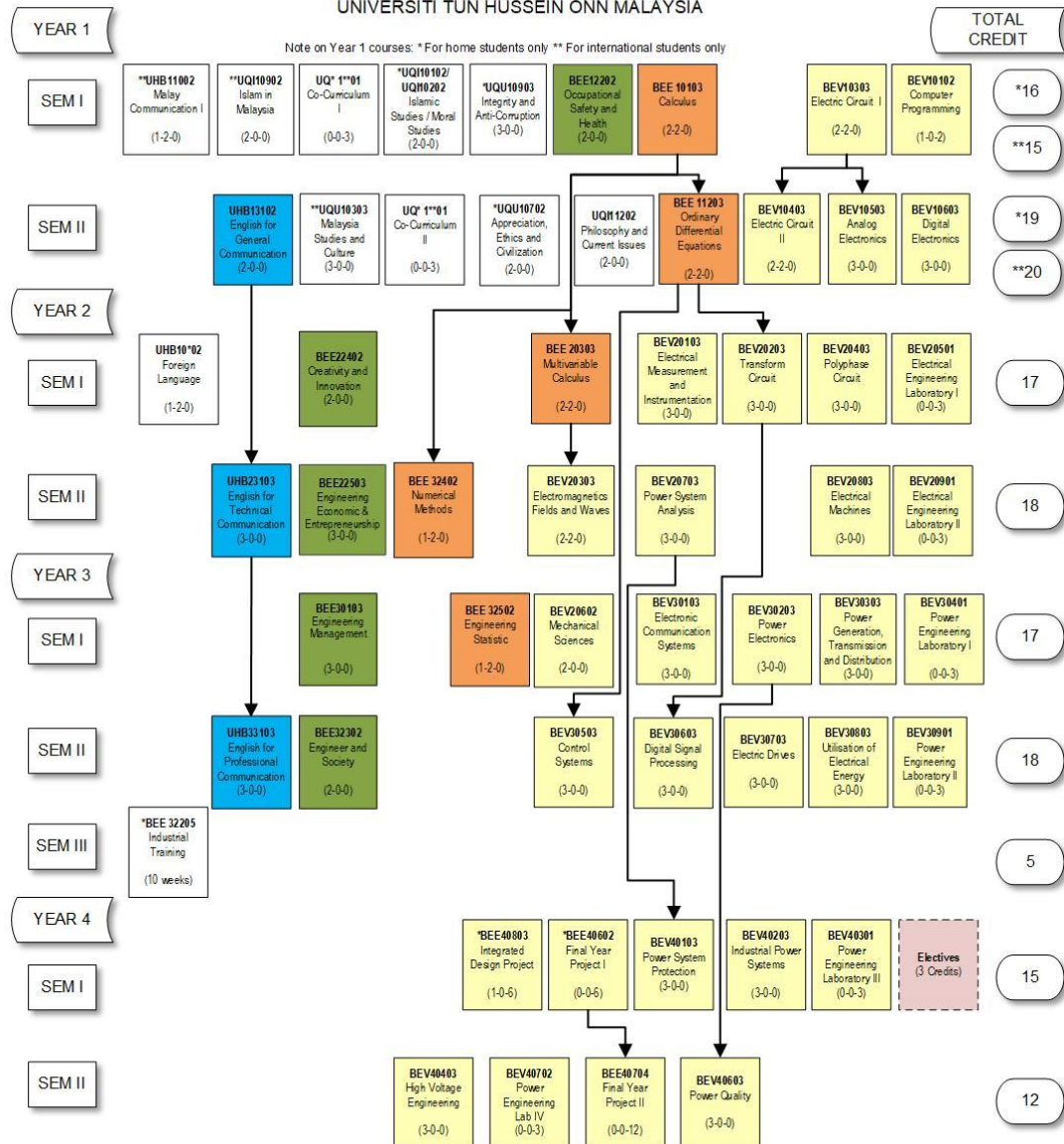
PLO	Domain	PLO Statement
1	Engineering Knowledge (EAC 1)	Apply knowledge of mathematics, natural science, engineering fundamentals and an engineering specialisation to the solution of complex engineering problems
2	Problem Analysis (EAC 2)	Identify, formulate, conduct research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences
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
4	Investigation (EAC 4)	Conduct investigation of complex engineering problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions
5	Modern Tool Usage (EAC 5)	Create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems, with an understanding of the limitations
6	The Engineer and Society (EAC 6)	Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solutions to complex engineering problems
7	Environment & Sustainability (EAC 7)	Understand and evaluate the sustainability and impact of professional engineering work in the solutions of complex engineering problems in societal and environmental contexts
8	Ethics (EAC 8)	Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice
9	Individual & Team Work (EAC 9)	Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings
10	Communication (EAC 10)	Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions
11	Project Management and Finance (EAC 11)	Demonstrate 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, to manage projects in multidisciplinary environments
12	Life Long Learning (EAC 12)	Recognise the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

ROADMAP BACHELOR OF ELECTRICAL ENGINEERING WITH HONOURS



ROADMAP BACHELOR OF ELECTRICAL ENGINEERING WITH HONOURS (BEV) FACULTY OF ELECTRICAL AND ELECTRONIC ENGINEERING UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FOR INTAKE 2023/2024



Minimum obtained credits for:
BEE32205 – 83 credits
BEE40602 – 95 credits
BEE40803 – 95 credits

ELECTIVES

BEV40503 Instrumentation for Process Control (3-0-0)	BEE41403 Electric Vehicles (2-0-2)	BEE41503 Photovoltaic Systems (3-0-0)	BEE41103 HClA Routing and Switching (2-0-2)	BEE41203 HClA Cloud Computing (2-0-2)	BEE41303 HClA Artificial Intelligence (2-0-2)	EEF40103 Introduction to Big Data (3-0-0)	EEW40103 Data Science and Applications (3-0-0)	EEW40203 Data Visualisation (3-0-0)	EEF40103 Machine Learning (3-0-0)	UQU40103 Professionals at Work (3-0-0)
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LEGEND FOR COURSES

 Compulsory University Courses	 Faculty Courses (Mathematics)
 Core Programme Courses	 Compulsory University Courses (English)
 Core Faculty Courses (Supporting)	 Electives

SLT CREDIT
137

Note: *Pre-registrations are compulsory to all students
*Course offerings are subject to decision by the Faculty
*Some courses are only offered based on semester

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 (international)	2
	UQU10903	*Integrity and Anti-Corruption (local)	3
	UWB11002	**Malay Language (International)	2
	UQ*1xxx1	Co-Curriculum I	1
	BEE12202	Occupational Safety and Health	2
	BEE10103	Calculus	3
	BEV10102	Computer Programming	2
	BEV10303	Electric Circuit I	3
Total			*16/**15

Sem.	Course Code	Course Name	Credit
2	UHB13102	English for General Communication	2
	UQU10702	*Appreciation, Ethics and Civilization	2
	UQI11202	*Philosophy and Current Issues	2
	UQU10303	**Malaysia Studies and Culture (International)	3
	UQ*1XXX1	Co-Curriculum I	1
	BEE11203	Ordinary Different Equations	3
	BEV10403	Electric Circuit II	3
	BEV10503	Analog Electronics	3
	BEV10603	Digital Electronics	3
Total			*19/**20

**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
Total			17

Sem.	Course Code	Course Name	Credit
4	UHB23103	English for Technical Communication	3
	BEE22503	Engineering Economic and Entrepreneurship	3
	BEE3202	Numerical Methods	2
	BEV20303	Electromagnetic Fields and Waves	3
	BEV20703	Power System Analysis	3
	BEV20803	Electrical Machines	3
	BEV20901	Electrical Engineering Laboratory II	1
Total			18

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
	BEV20602	Mechanical Sciences	2
	BEV30103	Electronic Communication System	3
	BEV30203	Power Electronics	3
	BEV30303	Power Generation Transmission and Distribution	3
	BEV30401	Power Engineering Laboratory I	1
	Total		17

Sem.	Course Code	Course Name	Credit
6	UHB33103	English for Professional Communication	3
	BEE32302	Engineers and Society	2
	BEV30503	Control System	3
	BEV30603	Digital Signal Processing	3
	BEV30703	Electric Drives	3
	BEV30803	Utilisation of Electrical Energy	3
	BEV30901	Power Engineering Laboratory II	1
	Total		18

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
	BEE40803	Integrated Design Project	3
	BEV40103	Power System Protection	3
	BEV40203	Industrial Power System	3
	BEV40301	Power Engineering Laboratory III	1
	Bxx4xx03	*Elective Course	3
	Total		15

Sem.	Course Code	Course Name	Credit
	BEE40704	Final Year Project II	4
	BEV40403	High Voltage Engineering	3
	BEV40603	Power Quality	3
	BEV40702	Power Engineering Laboratory IV	2
	Total		12

***ELECTIVE COURSE (CHOOSE ONLY ONE)**

Course Code	Course Name	Credit
BEV40503	Instrumentation for Process Control	3
BEE41403	Electric Vehicles	3
BEE41503	Photovoltaic Systems	3
EEF40103	Introduction to Big Data	3
EIF40103	Machine Learning	3
EW40103	Data Science and Applications	3
BEE41103	HCIA Routing and Switching	3
BEE41203	HCIA Cloud Computing	3
BEE41303	HCIA Artificial Intelligence	3
UQU40103	Professionals at Work	3

SYNOPSIS OF UNIVERSITY COURSES

UHB 13102 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. Argentar, D. M., Gillies, K. A. N., Rubenstein, M. M., & Wise, B. R. (2020). Reading and writing strategies for the secondary english classroom in a PLC at work: A guide to closing literacy achievement gaps and improving student ELA standards skill development. Solution Tree.
2. Bottomley, J., Maude, K., Prymachuk, S., & Waugh, D. (2019). Communication skills for your education degree. Critical Publishing.
3. Brownlie, F. (2019). Grand conversations, thoughtful responses: A unique approach to literature circles. Portage & Main Press.
4. Murphy, R. (2019). English Grammar in Use Books and interactive ebooks 5th edition: A self-study Reference and Practice Book for Intermediate Learners of English (5th). Cambridge University Press

UHB 23103 English for Technical Communication

Synopsis:

This course introduces students to basic information of technical communication such as technical definition and description by using appropriate language conventions. 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 orally present their proposal.

Pre-requisite: A pass in English for General Communication

References:

1. Deb, D., Dey, R., Balas, V. E., Deb, D., Dey, R., & Balas, V. E. (2019). Technical Writing and Publishing. Engineering Research Methodology: A Practical Insight for Researchers, 49-66.
2. Lannon, J.M. & Gurak, L.J. (2020). Technical Communication (15th ed.). Pearson Education.
3. Monavarian, M. (2021). Basics of Scientific and Technical Writing. MRS Bulletin 46, 354–355. <https://doi.org/10.1557/s43577-021-00091-7>.
4. Salamat, M. (2019). Technical Writing Competence of The Pre-Service Teachers. International Journal of Multidisciplinary Studies, 1(1), Archives-Archives.
5. Zhang, K., Cornejo, P. K., & Fosen, C. (2021, July). Improving Technical Writing for Civil Engineering Students Through Short Written Assignments. In 2021 ASEE Virtual Annual Conference Content Access.

UHB 33103 Englis for Professional Communication

Synopsis:

This course aims to assist students to use English competently and confidently for professional communications. The course is designed to help students improve their writing, oral, and interpersonal communication skills to succeed in their prospective professional environments..

Pre-requisite: A pass in English for Technical Communication

References:

1. Fairbairn, G.J, Reading, writing and reasoning: A guide for students. Maidenhead: Open University Press, 2011.
2. Lewis, J, Reading for Academic Success: reading and strategies. Boston: Houghton Mifflin. LB2395.3. L48, 2002.
3. Shipside, S, Effective Communication: Get your message across and learn how to listen. London: Dorling Kindersley.HF5718 .S54, 2007.
4. Smith, L.C, Exploring Content 1: Reading for academic success. White Plains, NY: Longman. PE1122.S64, 2004.
5. Wright, L. 2001. Critical Thinking: An introduction to analytical reading and reasoning. Oxford: Oxford University Press. B809.2. W74, 2001.

UHB 11002 **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.
3. Mardian Shah Omar. (2016). Perbualan Mudah Bahasa Melayu Untuk Pelancong Asing. Kuala Lumpur: Dewan Bahasa dan Pustaka
4. Nik Safiah Karim, Farid M. Onn, Hashim Haji Musa dan Abdul Hamid Mahmood. (2004). Tatabahasa Dewan, Edisi Baru. Kuala Lumpur: Dewan Bahasa dan Pustaka.
5. Norhashimah Jalaluddin, Mardian Shah Omar dan Norzilawati Jais. (2006). Bahasa Melayu untuk Penutur Asing. Buku 1 dan 2. Kuala Lumpur: Dewan Bahasa dan Pustaka.

UHB 1XX02 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.*

UQI 10102 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:

1. Abd Shakor dan Lain-lain (2017), Modul Pembelajaran Pengajian Islam (UQI10102/10602), cetakan keenam 2017, Batu Pahat: Penerbit UTHM.
2. Roziah Sidik (2011), Pengajian Islam, Selangor: Oxford Fajar. (BP42 .R69 2011)
3. al-Anjari, Fouzi (2013), Al-Asya'irah: Akidah Sebenar Ahli Sunnah Wal Jamaah, Seremban: Creative Publika. (BP166.14 .A54 2013)
4. Ramli Awang (2013), Akidah Penghayatan Tauhid al-Quran, Johor: Penerbit UTM Press. (BP165.5 .R35 2013)
5. T. Nama (2013), Pengurusan, Etika Kerja dan Personaliti: Perspektif Islam, Perlis: UMP. (BP190.5.M28 .P46 2013)
6. Mohd Fauzi Mohd Amin (2011), Pemerkasaan Fardhu Kifayah berteraskan al-Quran dan al-Sunnah, Negeri Sembilan: USIM. (BP130.8 .P45 2011)
7. Azzam, Abdul Aziz Muhammad (2010), Fiqh Muamalat: Sistem Transaksi dalam Fiqh Islam, Jakarta: Amzah. (BP158.C59 .A99 2010)
8. Harun Din (Dr.) (1990), Manusia Dan Islam, Kuala Lumpur: Dewan Bahasa dan Pustaka. (BP174 .M36 1990)
9. Muhammad Ahmad Abdul Jawwad (2004), Pengurusan Yang Profesional Dalam Islam, Kuala Lumpur: Penerbit Berlian. (BP173.77. J39 2004)
10. Mustafa Abdul Rahman (1998), Hadith 40, Kuala Lumpur: Dewan Pustaka Fajar. (BP135. A2 .M87 1998)

UQI 10102 Moral Studies

Synopsis:

This course explains on concepts of moral, aspects of moral and its importance in daily lives, Western moral theories and moral values of great religions of the world, moral values in work and current moral issues.

References:

1. Mohd Nasir Omar. (2010). Falsafah Akhlak, Penerbit Universiti Kebangsaan Malaysia, Bangi. [BJ1291 .M524 2010].
2. Hussain Othman. (2009). Wacana Asasi Agama dan Sains. Batu Pahat: Penerbit UTHM. [BL 240.3 H87 2009^a].
3. Hussain Othman, S.M. Dawilah Al-Edrus, Berhannudin M. Salleh & Abdullah Sulaiman. (2009). PBL Untuk Pembangunan Komuniti Lestari. Batu Pahat: Penerbit UTHM. [LB 1027.42 P76 2009a].
4. Eow Boon Hin. (2002). Moral Education. Longman. [LC268 .E48 2008].
5. Ahmad Khamis. (1999). Etika Untuk Institusi Pengajian Tinggi. Kuala Lumpur: Kumpulan Budiman. [LC315.M3 .A35 1999].

UQU 10303 **Malaysian Studies and Culture (Foreign student only)

Synopsis:

This course will provide students in basic understanding of Malaysia from various perspectives. Topics to be discussed include Malaysia in relation to its history and politic, constitution of Malaysia, system and administration structure of Malaysia, achievement and international affairs. In addition, students will also be exposed to the social community and solidarity, religion, cultural and heritage. Teaching and learning process through experiential learning, lecture and assignment enables students to acquire knowledge and appreciates the reality of life in Malaysia.

References:

1. Abdul Halim Nasir. (2004). Mosque Architecture in the Malay World. Bangi: Penerbit Universiti Kebangsaan Malaysia. [NA4670 .A23 2004].
2. Nazaruddin Mohd. Jali. (2003). Malaysian Studies: Nationhood and Citizenship. Petaling Jaya: Pearson Prentice Hall.
3. Francis Loh kok Wah dan Khoo Boo Teik. (2002). Democracy in Malaysia. Cornwall: Curzon Press.

4. Khoo Kay Kim. (2001). Malay Society: Transformation and Democratisation. Kelana Jaya: Pelanduk Publications.
5. Yahaya Ismail. (1989). The Cultural Heritage of Malaysia. Kuala Lumpur: Dinamika Kreatif Sdn. Bhd.

Courses listed below are also part of University requirement:

UQU 10702	Appreciation, Ethics and Civilization (local students only)
UQI 11202	Philosophy and Current Issues
UQI 10902	Islam in Malaysia (foreign students only)
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.*

SYNOPSIS OF CORE MATHEMATICS COURSES

BEE 10103 Calculus

Synopsis:

This course is mainly about the study of mathematical concept by using knowledge of calculus. First, students will be introduced to the concepts of limits and continuity including the limit at a point, limit at infinity, techniques to compute limits, and continuity at a point. Next, the students will learn the techniques of differentiation and integration as well as application of differentiation and integration in circuit analysis. Finally, the students will gain knowledge on further differentiation and integration, which covers inverse function, inverse trigonometry as well as inverse hyperbolic functions.

References:

1. Nur Anida Jumadi, Muhammad Anas Razali, Rosnah Mohd Zin, Wan Nur Hafsha Wan Kairuddin and Farhanahani Mahmud. (2019). "Engineering Mathematics 1". Malaysia: Penerbit UTHM.
2. Abd. Wahid Md. Raji, Hamisan Rahmat, Ismail Kamis, Mohd Nor Mohamad, Ong Chee Tiong. (2003). "Calculus for Science and Engineering Students." Malaysia: UTM Publication. Call number: QA303.3 .C34 2008, QA152.3 .S73 2007.
3. Anton, H., Bivens, I., Davis, S. (2005). "Calculus." 8th Ed. USA: John Wiley & Sons, Inc. Call number: QA303.A576 2005, QA303 .A57 2002, QA303.2 .A57 2010, QA303.2 .A574 2008, QA303.2 .A575 2005.
4. Smith, R. T., Minton, R. B. (2006). "Calculus: Concept & Connection." New York: McGraw-Hill.
5. Goldstein, Larry, Lay, David, Schneider, David. (2004). "Calculus and its Applications. Upper Saddle River, NJ :Pearson Education. Call number: QA303.2 .B75 2010, QA303 .G63 1996, QA303 .G63 1993.
6. Stroud, K. A. (2005). "Engineering Mathematics." 5th Ed. London: Macmillan Press Ltd. Call number: TA330 .S77 2007, TA330 .S77 1995, QA433 .S77 2005, QA371 .S77 2005.

BEE 11203 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.

BEE 20303 Multivariable Calculus

Synopsis:

This course is intended to provide students with the knowledge of Functions of Several Variables, Coordinate System, Vector Algebra, Multiple Integrals and Vector Calculus, as the basic knowledge to support their engineering courses.

Pre-requisite: BEE 10103 Calculus

References:

1. Abd Wahid Md Raji, Phang Chang, Phang Piau, (2007) Engineering Mathematics III BSM2913. Penerbit UTHM. (Learning Module).
2. Howard Anton, Irl Bivens, Stephen Davis (2005). Calculus (8th Edition). New York: John Wiley. (QA303 .A576 2005).
3. Straud, K.A. (1996). Further Engineering Mathematics. (3rd Edition). England: Macmillian Publication (TA330 .S773 1996)
4. Robert T. Smith, and Roland B. Minton (2012). Calculus Early Transcendental Function (3rd Edition). New York: McGraw-Hill (QA303.2 .S644 2012).
5. James Stewart (2003). Calculus. USA. Thomson Learning Inc. (QA303.2 .S72 2003).

BEE 32402 Numerical Methods

Synopsis:

This course introduces several techniques to solve mathematical engineering problems using numerical estimation and requires an elementary knowledge of functions, calculus, 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.

Pre-requisite: BEE 10103 Calculus

References:

1. Kim Gaik Tay, Chang Phang. (2017). Numerical Methods with CASIO FX-570 ES Plus 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].

BEE 32502 Engineering Statistics

Synopsis:

This course is designed to investigate the real data using the method of maximum likelihood to provide point estimation, given unknown parameters in the models. Maximum likelihood will be the central unifying approach. Examples will involve a distribution with a single unknown parameter, in cases for which the confidence intervals may be found by using the Central Limit Theorem. The culmination of the course will be the link of maximum likelihood technique to a simple straight line fit with normal errors.

References:

1. Norziha Che Him et al. (2009). Engineering Statistics (BSM 2922) First Edition. Pusat Pengajian Sains, UTHM
2. Nafisah @ Kamariah et. al. (2004). Engineering Statistics. Second Edition. Pusat Pengajian Sains, KUiTTHO. Call number: QA276.12 .M66 2004
3. Robert S. Witte (2017). Statistics 11th Edition, Wiley. ISBN-13: 978-1119386056
4. James T. McClave (2016). Statistics (13th Edition). Pearson. ISBN-13: 978-0134080215
5. Gareth James et al. (2017). An Introduction to Statistical Learning: with Applications in R. Springer. ISBN-13: 978-146147137

SYNOPSIS OF CORE FACULTY COURSES

BEE 12202 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 1994 (Act 514), FMA 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. Occupational Safety and Health Act and Regulations. MDC Publishers Printer Sdn. Bhd. 2001. Call number: KPG1390.M34 2001 rw N2.
2. Factories and Machinery Act & Regulations. MDC Publishers Printer Sdn. Bhd. 2001. Call number: KPG1390.A31967 .A4 2001 rw N1.
3. Ismail Bahari. (2006). Pengurusan Keselamatan dan Kesihatan Pekerjaan. Edisi ke-2. McGraw Hill Education (Malaysia). Call number: T55.I85 2006.
4. Davies, V. J. and Tomasin K. (2006). Construction Safety Handbook. 2 nd ed. Thomas Telford. Call number: TH443.R43 2006.
5. Anton, Thomas J. (2009). Occupational Safety and Health Management. 3 rd ed. McGraw-Hill. Call number: T55.A57 1989.

BEE 22402 Creativity and Innovation

Synopsis:

This course focuses on developing a creative person who will eventually think strategically, creatively and critically. The knowledge and skills acquired throughout the course will later be applied by the students in solving problems and making decisions in the future. In this course, students will be exposed to various creativity and problem solving techniques. Some of the skills to be covered throughout the course are problem solving, techniques in creativity and techniques in innovation. Students will also be participating in exhibition and competition. This course also will cover the industry needs by introducing them to the TRIZ concepts.

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)

BEE 22503 Engineering Economic and Entrepreneurship

Synopsis:

This course covers topics about engineering economics and entrepreneurship. On engineering economics aspect, the course starts with the analysis of engineering economic 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. Bruce R. Barringer, R. Duane Ireland (2010). Entrepreneurship: successfully launching new ventures, 3 rd Edition. Prentice-Hall.Call number HB615 .B37 2010.
5. Charles E. Bamford, Garry D. Bruton (2011). Entrepreneurship: A small business approach. New York: McGraw-Hill. Callnumber HD62.5 .B35 2011.

BEE 30103 Engineering Management

Synopsis:

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 also the management tools which comprises of taguchi, kaizen, enterprise resource planning (ERP) and six-sigma are exposed to the students. Other elements such as quality management, project management and its activities, lean production, maintenance and reliability are also included in this course.

References:

1. Lucy C. Morse, Daniel L Babcock (2007), Managing Engineering and Technology, 4th Edition, Upper Saddle River, Pearson. Call Number TA190 .M68 2007.
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 (2005), Project Management: Processes, Methodologies and Economics, 2nd Edition, Upper Saddle River, Pearson. Call Number TA190 .S57 2005.
4. 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. Abdul Talib Bon (2010), Pengurusan Kejuruteraan, Batu Pahat, Penerbit KUiTTHO. Call Number TA190 .A22 2010 a.

BEE 32302 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. Kemper, J.D., Sanders, B.R. Engineers and Their Profession (5th Edition), Oxford University Press; New York, 2001. (TA157 .K45 2001)
2. 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).
3. Vesilind, P.A., Gunn, A.S., Hold Paramount: The Engineer's Responsibility to Society (3rd Edition), Cengage Learning, Stamford, 2016 (TA157 .G86 2016)
4. 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)
5. Schinzinger, R., Martin, M.W., Introduction to Engineering Ethics (2nd Edition), McGraw-Hill, 2009 (TA157 .S43 2009)

SYNOPSIS OF CORE PROGRAMME COURSES

BEV 10102 Computer Programming

Synopsis:

This course provides comprehensive programming concepts through the use of high level programming languages such as C or C++. 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. 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
2. King, K.N. (2008). C Programming: A Modern Approach. 2nd ed. New York: W.W.Norton. Call number: QA76.73.C15.K56 2008
3. Stevenson, D.E. (2007). Programming Language Fundamentals by Example. 3rd ed. Auerbach: Taylor and Francis. Call number: QA76.6 .S73 2007
4. Delores M. Etter and Jeanine A. Ingber (2008). Engineering Problem Solving with C++. 2nd ed. Prentice-Hall. Call number: QA76.73.C153.E874 2008
5. D.S. Malik (2011). C++ Programming: From Problem Analysis to Program Design. 5th ed. Course Technology, Cengage Learning. Boston, USA. Call number: QA76.73.C153 .M345 2011

BEV 10303 Electric Circuit I

Synopsis:

This course introduces basic concepts and fundamental techniques in analyzing electrical circuits. Only circuits with resistive elements will be studied, as the priority is given on the understanding of the concepts for solving electrical circuits. Topics covered include concepts of electrical quantities, active and passive circuit elements, Ohm's Law, Kirchhoff's Voltage and Current Laws, nodal and mesh analysis, Thevenin and Norton theorems, and average and effective values in ac analysis.

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

BEV 10403 Electric Circuit II

Synopsis:

This course covers the circuit analysis of RC, RL and RLC network. Topics include energy storage elements, RC and RL first order circuit, series and parallel second order circuit, review of network theorems to solve sinusoidal steady state circuit analysis, and maximum power transfer.

Pre-requisite: BEV1030-3 Electric Circuit I

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

BEV 10503 Analog Electronics

Synopsis:

This course provides the fundamental knowledge in analog electronic. It encompasses basic electronic semiconductor devices such as diode, bipolar junction transistor (BJT), field effect transistor (FET). The emphasis is on the design aspects and applications which include the amplifier design based on single and multi-stage, 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 Circuit I

References:

1. R. Boylestad, L. Nashelsky; Electronic Devices and Circuit Theory, 11th Edition; Prentice Hall; 2013. Call number: TK7867. B69 2013
2. Donald A. Neamen; Microelectronics Circuit Analysis and Design, 4th Ed.; McGraw Hill, 2010. Call number: TK7867. N434 2010
3. Louis E Fretzel; Contemporary Electronics: Fundamentals, Devices, Circuits, and Systems; McGraw-Hill; 2014. Call number: TK7816. F75 2014
4. Albert Paul Malvino, David J. Bates, Electronic Principles, 7th Ed., McGraw Hill, 2007. Call number: TK7816 .M34 2007
5. Thomas L. Floyd, Electronics Fundamentals: Circuits, Devices and Applications, 8th Ed., Prentice Hall, 2013. Call number: TK7816. F56 2007
6. Robert T. Paynter; Introductory Electronics Devices and Circuits: Conventional Flow Version, 7th Ed., Pearson, 2006. Call number: TK7871.85. P39 2006
7. Thomas L. Floyd, Electronic Devices, 7th Ed., Prentice Hall, 2005. Call number: TK7870. F53 2005
8. Theodore F. Bogart, Jeffrey S. Beasley and Guillermo Rico, Electronic Devices and Circuits; 5th Ed., Prentice Hall; 2004. Call number: TK7867. B65 2004

BEV 10603 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. J. Floyd, Digital Fundamental, Merill MacMillan, 2009. Call number: TK7868.D5 .F564 2009

2. J. Tocci, Digital System, Principles and Application, Prentice Hall, 2011. Call number: TK7868.D5 .T62 2011
3. M. Morris Mano, Charles R. Kime, Logic and Computer Design Fundamentals, 4th Ed., Prentice Hall, 2008. Call number: TK7888.4 .M36 2008
4. Ferdjallah, Mohammed, Introduction to digital systems : modeling, synthesis, and simulation using VHDL / Mohammed Ferdjallah., John Wiley, 2011. Call number: TK7868.D5 .F47 2011
5. Kharate, G. K., Digital electronics, New Delhi : Oxford University Press, 2010. Call number : TK7868.D5 .K42 2010

BEV 20103 Electrical Measurement and Instrumentation

Synopsis:

There are many classifications of measurement instruments for electrical quantities. This subject is developed to train the student about the principles of electrical measurement. Many types of measurements parameters will be used such as voltage, current, frequency, phases, power, resistance, capacitance, inductance, and resonance frequency. Besides, the electrical measurements instruments such as voltmeter, ammeter, ohmmeter, digital multimeter, oscilloscope, power meter and energy meter will be introduced to improve the student's knowledge about electrical measurement.

References:

1. Steven Geczy, Basic Electrical Measurements, Prentice Hall, 2005. Call Number: TK275. S76
2. Paul B. Zbar, Gordon Rockmaker, David J. Bates Basic Electricity - A Text Lab Manual, McGraw-Hill, 2002. Call Number: TK7818. Z333 2001
3. Eiji Mikawa, Fundamental Electrical Engineering, Yokogawa Electric Corporation. Call Number: TK146 .T43 1997
4. R. A. Witte, Electronic Test Instruments: Analog and Digital Measurements, 2nd Ed., 2002, Prentice-Hall.
5. Glen A. Mazur, Digital Multimeter Principles; American Technical Publishers, Inc.; 2000. Call Number: TK7879 .M39 2000
6. S.C. Bhargava, Electrical Measuring Instrument and Measurement, India:BS publications, 2013. Call number: TK275.S32 2013
7. Jones L D, Chin A F, Electronic Instruments and Measurements, Prentice-Hall, 2008. Call Number: TK7878. B42 2008

BEV 20203 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

BEV 20303 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

BEV 20403 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

BEV 20501 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. Nilsson, Susan A. Riedel (2002). Introductory circuits for electrical and computer engineering, Addison Wesley. Call Number: TK7867. N54 2002.

BEV 20602 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, Serop, Manufacturing engineering and technology, 7th Edition, 2014, 9789810694067, Call Number TS176. K34, 2014.

BEV 20703 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

BEV 20803 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. Zorbas, Dino; Electric Machines: Principles, Applications and Control Schematics, 2nd Ed.; Cengage, Australia, 2015. [TK2000. Z67 2015]
2. Sen, P. C.; Principles of Electric Machines & Power Electronics, 3rd Ed.; Hoboken, NJ: John Wiley, 2014. [TK2000. S46 2014]
3. Bhattacharya, S. K; Electrical Machines, 4th Ed.; Tata McGraw-Hill, 2014. [TK2000. B42 2014]
4. Wasynczuk, Oleg; Analysis of Electric Machinery & Drive Systems, 3rd Ed.; Institute of Electrical and Electronics Engineers, 2013 [TK2181. A52 2013]
5. Hughes, Austin; Electric Motors And Drives: Fundamentals, Types And Applications, 4th Ed.; Oxford: Newnes, 2013. [TK2514 .H83 2013]
6. Gönen, Turan; Electrical Machines with MATLAB, 2nd Ed.; Boca Raton, FL: CRC Press, 2012 [TK2000. G66 2012]
7. Mohan, Ned; Electric Machines and Drives: A First Course; Hoboken, NJ: Wiley, 2012. [TK2000 .M63 2012]

BEV 20901 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 Saddle 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.

BEV 30103 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 Analog 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 Communication, 5th Ed, John Wiley, 2010.

BEV 30203 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, Boca 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 Wiley, 2013 TK7872.C8 .Z46 2013
5. Rashid M.H, Alternative Energy in Power Electronics, Amsterdam: Butterworth-Heinemann, 2015, TK7881.15 .A47 2015

BEV 30303 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.

BEV 30401 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

BEV 30503 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

BEV 30603 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

BEV 30703 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 Machinery Using Matlab/Simulink, Prentice Hall 1997. Call Number: TK2391 .O54 1998.

BEV 30803 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 Supply 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.

BEV 30901 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 and Systems, 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

BEV 40103 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.

BEV 40203 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).

BEV 40301 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. Hadi Saadat, Power System Analysis, 2nd Edition, Prentice Hall, 2004. Call number: TK1011 .S33 2002
2. John J. Grainger, William D. Stevenson, Power System Analysis, McGraw Hill, 1994. Call number: TK3001 .G73 1994
3. Muhammad H. Rashid, Power electronics: circuits, devices, and applications, Prentice Hall, 2004
4. Ned Mohan, William P. Robbins, Tore M. Undeland, Powerelectronics: converters, applications and design, John Wiley, 2003.
5. Ashfaq Ahmed, Power Electronics for Technology, Prentice Hall, 1999
6. Theodore Wildi, Electrical Machines, Drives and Power Systems, Prentice Hall, 2006. Call number: TK2182 .W542006
7. Chapman Stephen J., Electric Machinery and Power System Fundamentals, McGraw-Hill, 2002. Call number: TK2000.C462 2002 N4, TK2000 .C462 2002, TK2000 .C462 2002N3.

BEV 40403 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. Subir Ray, An Introduction to High Voltage Engineering, Prentice Hall India, 2004.
2. E. Kuffel, W. S. Zaengl & J. Kuffel, High Voltage Engineering: Fundamentals, Newnes, 2000.
3. Haddad & Warne, Advance in High Voltage Engineering, IET Power and Energy Series, 2004.
4. M. S. Naidu & V. Kamaraju, High Voltage Engineering, McGraw-Hill, 2004.
5. D. Kind, High Voltage Test Tehniques, Newnes, 2001.
6. M. Abdel Salam, H. Hanis, A. El-Morshedy and R. Radwan, High Voltage Engineering: Theory and Practice, Marcel Dekker, 2000.

7. Stephen A. Jay, High Voltage Electricity Installations: A Planning Perspective, Hoboken, NJ, John Wiley, 2006.

BEV 40502 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 Commons, 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

BEV 40603 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. Barry W. Kennedy, Power Quality Primer, McGraw-Hill, 2000. Call number: TK1010 .K46 2000 N1, TK1010 .K46 2000 N2.
2. Roger C. Dugan, Mark F. McGranaghan, H. Wayne Beaty, Electrical Power Systems Quality, McGraw-Hill, 2000. Call number: TK1010 .D84 1996 N1, TK1010 .D84 1996 N2.
3. C. Sankaran, Power Quality, CRC Press, 2002
4. Alexander Kusko, Marc T. Thompson, Power Quality in Electrical Systems, McGraw-Hill, 2007
5. Bhim Singh, Ambrish Chandra, Kamal Al-Haddad, Power Quality "Problems and Mitigation Techniques", Wiley, 2015

BEV 40702 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- Hill Education, 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. D. Meeker, "Finite Element Method Magnetics Version 4.2 User's Manual", QinetiQ North America, Waltham, MA, Oct 2010.
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. 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.
10. J. Pedro, A. Bastos, N. Sadowski, "Electromagnetic Modeling by Finite Element Methods, CRC Press, Apr 2003.

BEE 32205 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. Buku Log Latihan Industri UTHM (Bahagian A), Pejabat Penerbit, UTHM.

BEE 40602 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).

BEE 40704 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).
4. Final year project, The Institution of Engineering and Technology (IET).

BEE 40803 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. Malaysian Standard 2013, MS 1525, Code Of Practice On Energy Efficiency And Use Of Renewable Energy For Non-Residential Buildings
2. G. Dieter. Engineering Design, 3rd Edition. Boston: McGraw-Hill, 2013. Call Number: TA174 .D53 2013
3. R. Birmingham, G. Cleland, R. Driver and D. Maffin. Understanding Engineering Design: Context, Theory and Practice. London: Prentice-Hall, 1997. Call Number: TA174 . U63 1997
4. N. Cross. Engineering Design Methods, 3rd Edition. Chicester: John Wiley, 2008. Call Number: TA174 .C76 2008
5. M. N. Horenstein. Design Concepts for Engineers, 2nd Edition. Upper Saddle River, NewJersey: Prentice Hall, 2006. Call Number: TA174 .H67 2006
6. B. Hyman. Fundamentals of Engineering Design, 2nd Edition. Upper Saddle River, New Jersey: Prentice Hall, 1998. Call Number: TA174 .H95 1998
7. W. Bolton. Mechatronics: Electronic Control Systems in Mechanical and Electrical Engineering. 3-rd Edition, Upper Saddle River, NewJersey: Prentice-Hall, 2003. Call number: TJ163.12.B64 2003
8. R. Jacob, D. Alexander and L. Lane. A Guidebook to Intellectual Property: Patents, Trade Marks, Copyright and Designs. 5th Edition, Sweet & Maxwell, 2004. Call number: KD1269.3.J32 2004
9. A. K. Ghosh. Introduction to Measurements and Instrumentation. New Delhi: Prentice-Hall, 2007. Call number: TA165.G46 2007

SYNOPSIS OF ELECTIVE COURSES

BEV 40503 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 Commons, 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.

BEE 41403 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:

1. IOT fundamentals: networking technologies. protocols, and use cases for the internet of things, Indianapolis, IN: Cisco Press, 2017.
2. Sebastian Thrun; Wolfram Burgard; Dieter Fox: Probabilistic robotics, Cambridge, Massachusetts: The MIT Press, 2006.
3. Electric vehicle technology explained / James Larminie, John Lowry. Call number: TL220.L35, 2003.
4. Introduction to modern power electronics / Andrzej M. Trzynadlowski. Call number: TK7881.15. T79 2016.
5. Power electronics and electric drives for traction applications/ edited by Gonzalo Abad. Call number: TJ1095.P68, 2017.
6. Modeling power electronics and interfacing energy conversion systems / M.Godoy Simoes and Felix A. Farret. Call Number: TK7881.15. S55, 2017.

BEE 41403 Photovoltaic Systems

Synopsis:

The course has been designed to introduce the technology of solar photovoltaic engineering and grid-connected photovoltaic (GCPV) 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. Seda Malaysia Grid-Connected Photovoltaic Systems Design, Sustainable Energy Development Authority Malaysia, 2016.
2. Seda Malaysia Off-Connected Photovoltaic Systems Design, Sustainable Energy Development Authority Malaysia, 2014.
3. Ali Keyhani, Design of Smart Power Grid Renewable Energy System, Wiley, ISBN 9781118978771, 2017.

BEE 41103 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

BEE 41203 HCIA Cloud Computing

Synopsis:

uawei 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.

BEE 41303 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. Flach, Peter A, Machine learning: The Art and Science of Algorithms That Make Sense of Data, Call Number: Q325.5. F52 2012.
5. Brent M. Gordon, Artificial Intelligence: Approaches, Tools and Applications, Call Number: Q335.5. A78 2011.

EEF 40103 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

EIF 40103 Machine Learning

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. 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

EWF 40103 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).

EWF 40203 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:

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

UQU 40103 Professional@Work

Synopsis:

The Professional at Work course is designed to improve the ability of students to develop their technical skills in professionalism, social responsibility, and environmental sustainability. Nurturing and empowering the student with these skills could enhance the student's professionalism prior to entering the workspace. The philosophy of the course is ongoing, systematic, and aimed toward a fulfilling work life, which is part of their overall plan for personal development. This course includes an introduction to professional practice, ethics, legal, innovation and infrastructure, social responsibility, and professional environment. Also, this course was developed by referring to Sustainable Development Goals (SDG) and Politic, Economy, Social, Technology, Environment, and Legal (PESTEL) guidelines. Particularly, students will propose a suitable community service project that deals with local/community issues that lead to professional practices.

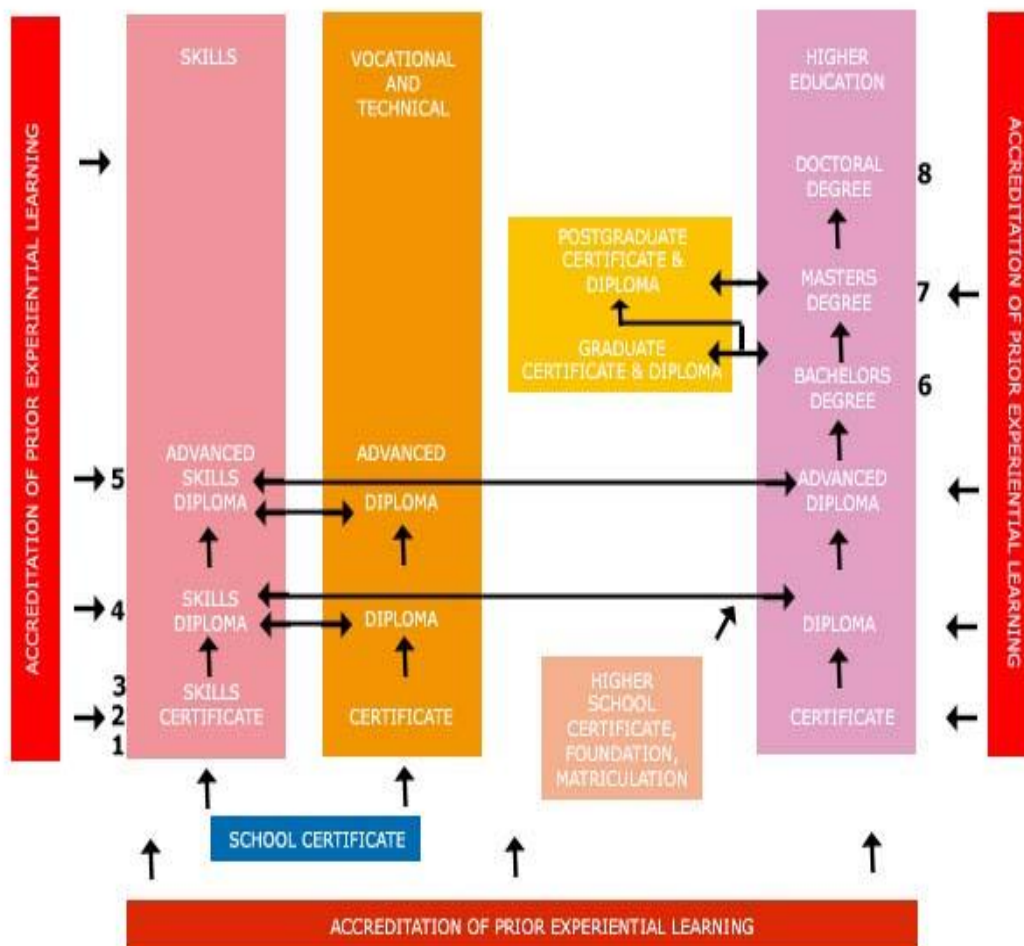
References:

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 voluntary 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].

Further Education Pathway (Source from Malaysian Qualification Framework)

MQF BASED ON QUALIFICATION LEVEL AND EDUCATIONAL PATHWAY



**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 2023
FKEE



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