



**PROGRAMME SPECIFICATION**

<b>Programme</b>	<b>Bachelor of Electrical Engineering (Power System) with Honours</b>	
<b>Award</b>	<b>Bachelor of Electrical Engineering ( Power System ) with Honours</b>	
<b>Duration</b>	Minimum	Maximum
	<b>8 semester</b>	<b>12 semester</b>

Terms and Conditions for enrolment:

Entry requirements to gain entry to any courses in this faculty are as follows:

1. STPM Holder

General University Requirements:

- i. Pass in SPM with good grades.
- ii. Pass with credit in Bahasa Melayu/Bahasa Malaysia or in Bahasa Melayu/Bahasa Malaysia July Paper at SPM level or its equivalent.
- iii. Pass STPM with at least a CPA of 2.00 and at least Grade C (GPA 2.00) in General Paper and Grade C (GPA 2.00) in other two (2) subjects.
- iv. A pass in English and obtained at least Band 1 in the "Malaysian University English Test" (MUET) or its equivalent.

Special Requirements for University Programme:

- i. Obtained at least Grade C (GPA 2.00) at STPM level in these subjects:
  - a. T Mathematics / Advanced T Mathematics
  - b. Physics
  - c. Chemistry
- ii. A pass in English at SPM level
- iii. Clear Sight / Colour Blindness
- iv. No physical handicap which can disrupt practical training.

2. KPM Matriculation Certificate Holder

General University Requirements:

- i. Pass in SPM with good grades.
- ii. Pass with credit in Bahasa Melayu/Bahasa Malaysia or in Bahasa Melayu/Bahasa Malaysia July Paper at SPM level or its equivalent.
- iii. Pass KPM Matriculation / UM Science Foundation / UiTM Foundation with at least a CGPA of 2.00
- iv. A pass in English and obtained at least Band 1 in the "Malaysian University English Test" (MUET) or its equivalent.

Special Requirements for University Program:

- i. Obtained at least Grade C (GPA 2.00) at Matriculation / Foundation level in these subjects:
  - (a) Mathematics / Additional Mathematics
  - (b) Physics / Engineering Physics
  - (c) Chemistry / Engineering Chemistry



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- ii. At least a pass in English at SPM level.
- iii. Clear sight / Colour blindness.
- iv. No physical handicap which can disrupt practical training.

#### **3. Diploma Holder or equivalents**

##### **University General Requirements:**

- i. Pass in SPM with good grades.
- ii. Pass with credit in Bahasa Melayu/Bahasa Malaysia or in Bahasa Melayu/Bahasa Malaysia July Paper at SPM level or its equivalent.
- iii. A diploma holder or other equivalents which is accredited by Malaysian government and University Senate; or pass Matriculation examination for the year of 2006 or before with at least a CGPA of 2.00
- iv. A pass in English and obtained at least Band 1 in the “Malaysian University English Test” (MUET) or its equivalent.

##### **Special Requirements for University Program:**

- i. A Diploma holder in related Engineering fields from other Higher Learning Institutions (IPTA) or its equivalent which is accredited by Malaysian government and approved by the University Senate with at least a CGPA of 2.70
- ii. Candidates who do not fulfill the CGPA requirement as stated in (i) but obtained at least a CGPA of 2.50 and have 2 years working experiences will be considered. Candidates who fulfill the entry requirements but do not obtained at least Band 2 can apply and if succeed, must obtain at least Band 2 in “Malaysian University English Test” (MUET)
- iii. A pass in English at SPM level.
- iv. Clear sight / Colour blindness
- v. No physical handicap which can disrupt practical training.

### **PROGRAMME EDUCATIONAL OBJECTIVES (PEO)**

The Bachelor of Electrical Engineering (**Power System**) programme aims to produce:

1. **Competent in electrical power system field according to the needs of organizations and industries.**
2. **Practice electrical engineering knowledge in organizations and community with accountability.**
3. **Communicate effectively within the organization and society with quality leadership.**
4. **Continuous learning to improve knowledge and competencies to meet current needs.**

### **PROGRAMME LEARNING OUTCOMES (PLO)**



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**Programme Structure** Graduate should acquire the followings :

Code	Course	Credit	Lecture	Tutorial	Practical	SLT
<b>1. Acquire and apply knowledge of mathematics, science and engineering fundamentals in</b>						
<b>UNIVERSITY COURSE</b>						
UV210101	Acquire basic principles and engineering practice in electrical engineering field.	0			0	2
UVB10101	Communicate effectively in writing and speech with engineers, other professionals and the community.	2	2	1	0	2
UWB20102	Communicate large writing	2	2	1	0	3
UWS10102	Identify, formulate and provide creative, innovative and effective solutions to electrical engineering problems	2	2	0	0	2
UWB10102	Work effectively as a team or lead an organization	2	2	1	0	3
UC6.1*	Engage in lifelong learning to enhance knowledge and skills.	0	0	0	2	2
UWA10102	Practice sound business principles and prudent financial management.	2	2	0	0	2
UWA10102	Commit to ethical engineering profession practice.	2	2	0	0	2
BEE.31202	Lead the organization and work effectively in any environment.	2	2	1	0	3
UQ10.1*	Apply systematic approach in the design and evaluation of operating performance.	2	2	0	0	2
UWS10105	Appreciate the principles of Sustainable development in electrical engineering practice. Malaysia	3	3	0	0	3
UWS 10303	**Malaysian Studies and Culture					
UWB1**02	Foreign Language	2	2	1	0	3
<b>MATHEMATICS COURSE</b>						
BWM10103	Engineering Mathematics I	3	3	1	0	4
BWM10303	Engineering Mathematics IIE	3	3	1	0	4
BWM20403	Engineering Mathematics III	3	3	1	0	4
BWM30602	Engineering Mathematics IV	2	2	1	0	3
BWM20502	Engineering Statistics	2	2	1	0	3
<b>FACULTY SUPPORT COURSE</b>						
BEC10102	Computer Programming	2	1	1	3	5
BPK20802	Entrepreneurship	2	2	1	0	3
BPK30902	Engineering Economics	2	2	1	0	3
BEE30103	Engineering Management	3	3	1	0	4
BEE10202	Engineers and Society	2	2	1	0	3
<b>CORE COURSE</b>						
BEE 30304	Industrial Training	4	8 weeks			0
BEF 12302	Digital Techniques	2	2	1	0	3
BEF 12403	Electric Circuit Analysis I	3	3	1	0	4



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BEF 12503	Electric Circuit Analysis II	3	3	1	0	4
BEF 12603	Electronic Circuit Theory	3	3	1	0	4
BEF 32703	Electronics for Measurement and Control	3	3	1	0	4
BEF 22803	Transform Circuit Analysis	3	3	1	0	4
BEF 22903	Engineering Electromagnetics	3	3	1	3	3
BEF 33003	Electrical Control System	3	3	1	0	4
BEF 33103	Electronic Drives and Applications	3	3	1	0	4
BEF 33203	Utilisation of Electrical Energy	3	3	1	0	4
BEF 43303	Power System Analysis and Protection	3	3	1	0	4
BEF 23401	Electrical Engineering Laboratory I	1	0	0	3	3
BEB 31803	Electronic Communication Systems	3	3	1	0	4
BEE 40602	Final Year Project I	2	0	0	6	6
BEE 40704	Final Year Project II	4	0	0	12	12

**SPECIALISATION COURSE**

BEF 23803	Polyphase Circuit Analysis	3	3	1	0	4
BEF 23903	Electrical Measurements	3	3	1	0	4
BEF 24002	Electronic Instruments and Measurements	3	3	1	0	4
BEF 24103	Electrical Machines	3	3	1	0	4
BEF 24201	Electrical Engineering Laboratory II	1	0	0	3	3
BEF 34303	Electric Power Generation	3	3	1	0	4
BEF 34403	Electric Motor Drives	3	3	1	0	4
BEF 34503	Power Electronics	3	3	1	0	4
BEF 34603	Electric Power Transmission and Distribution	3	3	1	0	4
BEF 34702	Power Engineering Laboratory I	2	0	0	6	6
BEF 44803	Power Quality	3	3	1	0	4
BEF 44903	Industrial Power Systems	3	3	1	0	4
BEF 35002	Power Engineering Laboratory II	2	0	0	6	6
BEF 45102	Power Engineering Laboratory III	2	0	0	6	6
BEF 45203	High Voltage Engineering	3	3	1	0	4
BEF 45303	Electrical Systems Design	3	3	1	0	4
BEF 45401	Power Engineering Laboratory IV	1	0	0	3	3
<b>TOTAL</b>		<b>132</b>	<b>110</b>	<b>59</b>	<b>54</b>	<b>210</b>

**NOTE:**

\*Exempted if MUET results more than or equal to band 3

\*\*International student only



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**Matrix of Programme Learning Outcome – Course**

Bil	Code	Course	Programme Learning Outcome										
			LO-1	LO-2	LO-3	LO-4	LO-5	LO-6	LO-7	LO-8	LO-9	LO-10	LO-11
<b>UNIVERSITY COURSE</b>													
1	UWA10302	Islamic and Asian Civilisation	x		x						x		
2	UWB10101	*English For Academic Purposes	x		x				x				
3	UWB20302	Technical Writing	x		x				x				
4	UWS10202	Ethnic Relations	x					x			x		
	UWB 1**02	**Malay Language											
5	UWB10202	Effective Communication	x					x	x				
6	UQ* 1**01	Co-Curriculum I		x				x	x				
7	UWA10102	Islamic Studies/	x		x						x		
	UWA10202	Moral StudiesI	x		X						x		
8	BEE31202	Creativity and Innovation	x					x				x	
9	UQ* 1**01	Co-Curriculum II		x				x	x				
10	UWS10103	Nationhood and Current Development of Malaysia	x								x	x	
	UWS 10303	**Malaysian Studies and Culture											
11	UWB1**02	Foreign Language	x		x						x		
<b>Total</b>			<b>9</b>	<b>2</b>	<b>5</b>	<b>0</b>	<b>5</b>	<b>5</b>	<b>0</b>	<b>5</b>	<b>2</b>	<b>0</b>	<b>0</b>
<b>MATHEMATICS COURSE</b>													
12	BWM10103	Engineering Mathematics I	x		x				x				
13	BWM10303	Engineering Mathematics IIE	x		x				x				
14	BWM20403	Engineering Mathematics III	x		X				x				
15	BWM30602	Engineering Mathematics IV	x		x				x				
16	BWM20502	Engineering Statistics	x			x			x				
<b>Total</b>			<b>5</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>FACULTY SUPPORT COURSE</b>													
17	BEC10102	Computer Programming	x					x	x				
18	BPK20802	Entrepreneurship				x				x		x	
19	BPK30902	Engineering Economics				x				x		x	
20	BEE30103	Engineering Management	x		x							x	
21	BEE10202	Engineers and Society	x					x			x		



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<b>CORE COURSE</b>														
22	BEE 30304	Industrial Training		x	x					x				
23	BEF 12302	Digital Techniques		x				x				x		
24	BEF 12403	Electric Circuit Analysis I	x					x				x		
25	BEF 12503	Electric Circuit Analysis II	x					x				x		
26	BEF 12603	Electronic Circuit Theory	x					x				x		
27	BEF 32703	Electronics for Measurement and Control		x	x					x				
28	BEF 22803	Transform Circuit Analysis		x	x					x				
29	BEF 22903	Engineering Electromagnetics				x						x	x	
30	BEF 33003	Electrical Control System			x	x				x				
31	BEF 33103	Electronic Drives and Applications		x	x					x				
32	BEF 33203	Utilisation of Electrical Energy				x				x			x	
33	BEF 43303	Power System Analysis and Protection			x	x							x	
34	BEF 23401	Electrical Engineering Laboratory I		x				x				x		
35	BEB 31803	Electronic Communication Systems		x	x					x				
36	BEE 40602	Final Year Project I		x	x			x						
37	BEE 40704	Final Year Project II				x				x	x			
<b>Total</b>			<b>3</b>	<b>8</b>	<b>8</b>	<b>5</b>	<b>1</b>	<b>5</b>	<b>2</b>	<b>7</b>	<b>1</b>	<b>5</b>	<b>3</b>	
<b>SPECIALISATION COURSE</b>														
38	BEF 23803	Polyphase Circuit Analysis	x					x					x	
39	BEF 23903	Electrical Measurements		x				x			x			
40	BEF 24002	Electronic Instruments and Measurements		x	x			x						
41	BEF 24103	Electrical Machines				x		x				x		
42	BEF 24201	Electrical Engineering Laboratory II		x				x			x			
43	BEF 34303	Electric Power Generation			x	x							x	
44	BEF 34403	Electric Motor Drives				x						x	x	
45	BEF 34503	Power Electronics				x	x						x	
46	BEF 34603	Electric Power Transmission and Distribution			x	x				x				
47	BEF 34702	Power Engineering Laboratory I		x				x				x		
48	BEF 44803	Power Quality				x							x	x
49	BEF 44903	Industrial Power Systems	x										x	x
50	BEF 35002	Power Engineering Laboratory II		x				x				x		



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<b>52</b>	BEF 45203	High Voltage Engineering				x	x	x					
<b>53</b>	BEF 45303	Electrical Systems Design				x						x	x
<b>54</b>	BEF 45401	Power Engineering Laboratory IV		x			x				x		
<b>Total</b>			<b>2</b>	<b>7</b>	<b>3</b>	<b>8</b>	<b>9</b>	<b>3</b>	<b>0</b>	<b>2</b>	<b>5</b>	<b>5</b>	<b>7</b>
			<b>22</b>	<b>19</b>	<b>21</b>	<b>16</b>	<b>17</b>	<b>19</b>	<b>4</b>	<b>15</b>	<b>11</b>	<b>10</b>	<b>10</b>

**Delivery Method**

This program is disseminated by various delivery methods to fulfill the subject learning outcomes and in general, to prepare centralized learning opportunities. Those methods are:

1. Lectures and Tutorials
2. Practical and Application session-oriented: Laboratory work, workshop, site visit / site work, demonstration or simulation.
3. Seminar and industrial visit.
4. Case-based Learning (Project-Oriented Problem-based Learning)
5. Project
6. E-Learning

**Evaluation Method**

Formative and Summative evaluations which comprise of:

1. Written Examinations
2. Test / Quiz
3. Assignment
4. Presentation
5. Laboratory Report
6. Skill Inspection
7. Log book
8. Industrial Evaluation



## **PROGRAMME SPECIFICATION**

Terms and Conditions for the award of the program:

1. Student should apply for the award and the application is granted by the Faculty.
2. Pass all compulsory subjects as required by the program.
3. Obtained a total KREDIT DAPAT as required and obtained KEDUDUKAN BAIK.
4. A pass in Bahasa Melayu at SPM level.
5. **Obtained at least Band 2 in “Malaysian University English Test” (MUET)**
6. Application must be made by using Bachelor’s Degree Award Application Form within the stipulated time imposed by the University.
7. Obtained approval and award certification from the Senate.

### **Career Opportunity**

Graduates will have a vast career opportunity in electrical power system engineering field within the country itself or abroad as electrical engineers. However, graduates are qualified to become an engineer in various industries such as factory sectors and manufacturing, electrical contractors, service and consultancy industries, measurement and testing, maintenance, and other engineering fields. Graduates who have passion in research can work as a researcher in any institutions that offer applied research area. Other than that, graduates are qualified to further their study in any postgraduates courses at any universities within the country itself or abroad subject to excellent academic results. In addition, graduates can become an academician at any local universities and other higher learning institutions, polytechnics, community colleges or schools.

### **Related Information**

(Lecturers/Fasilitators/Project/Target Group/Fees/etc)

1. Academicians:
  - i. Lecturers teaching university compulsory subjects and basic subjects comprise of academic staffs at Centre for Science Studies (PPS), Centre for Humanities and Communication Studies (PPKK) and Centre of Co-Curricular, Sports and Culture (PKSK). Lecturers who teach core and specialisation course of the programs comprise of academic staffs in the Faculty of Electrical and Electronic Engineering.
  - ii. Instructors teaching Engineering Skills comprise of academic staffs who possess industrial experiences.
2. Learning Concept  
The learning concept of this program is practice-oriented and Outcome-Based Education (OBE) in which the students will be exposed to theoretical and practical training exercises in the university for 8 semesters and in the industry for 12 weeks.





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**3. Fees**

The fee rates for this program are RM510.00 (Fee paid once during the whole program duration) and RM1,908.00 (Fee for every semester)

4. Faculty PROFORMA can be obtained from the University websites, [www.uthm.edu.my](http://www.uthm.edu.my)

Prepared by:

Approved by:

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*Note : Information is true in printing time and may be eliminated change at anytime*