



PROGRAMME SPECIFICATIONS

| | | |
|------------------|---|--------------------|
| Programme | Bachelor in Electronic Engineering (Computer Engineering) with Honours | |
| Award | Bachelor in Electronic Engineering (Computer Engineering) with Honours | |
| Duration | Minimum | Maximum |
| | 8 semester | 12 semester |

ADMISSION REQUIREMENT

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 Program:

- 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) Chemistry / Engineering Chemistry
 - (c) Physics / Engineering Physics or Biology with credit in physics at SPM level
- ii. At least a pass in English at SPM level.
- iii. Clear sight / Colour blindness.
- iv. No physical handicap which can disrupt practical training.



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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 objectives of this programme are to produce engineers who are:

1. competent in the field of electronic and computer engineering to fulfill the needs of industry at the national and international level
2. able to deliver, enhance and develop their ability and experience on a continuous basis as professional engineers.
3. able to practice and implement ethics and social responsibility to the global community.



PROGRAMME SPECIFICATIONS

PROGRAMME LEARNING OUTCOME (PLO)

Upon graduation, a graduate should acquire the followings :

- | | | |
|----|---|--|
| 1 | acquire and apply knowledge of mathematics and sciences and engineering fundamentals in electronic and comp | knowledge |
| 2 | use of techniques, skills, and modern engineering tools necessary for electronic and computer engineering practice in industry. | knowledge and practical |
| 3 | communicate effectively both in written and spoken forms with engineers, and other professionals and community at large. | communication skills |
| 4 | identify, formulate, and solve electronic and computer engineering problems by means of creativity and innovation. | problem solving |
| 5 | function effectively individually or in teams with the capacity to be a leader. | teamworking |
| 6 | recognize the need for, and to engage in, life-long learning and able to manage information professionally. | life-long learning |
| 7 | be self-motivated and develop enterprenuership skills for active and continuous career development. | enterpreneurship |
| 8 | understand and commit professional, ethical and humanity responsibility according to engineer's code of conduct. | professionalisme, ethics and humanity |
| 9 | appreciate and demonstrate effective leadership responsibility. | leadership |
| 10 | design, conduct experiments, analyze and interpret data for the development of | design |
| 11 | apply the principles of design in electronic and computer engineering for sustainable development. | sustainable development |



PROGRAMME SPECIFICATIONS

PROGRAM STRUCTURE

| CODE | COURSES | CREDIT | L | T | P | SLT |
|-----------|--|--------|---|---|---|---------|
| UWA10302 | Islamic and Asian Civilisation | 2 | 2 | 0 | 0 | 2 |
| UWB10101 | English For Academic Purposes ** | 1 | 1 | 1 | 0 | 2 |
| UWB20302 | Technical Writing | 2 | 2 | 1 | 0 | 3 |
| UWS10202 | Ethnic Relations | 2 | 2 | 0 | 0 | 2 |
| UWB11202 | **Malay Language | | | | | |
| UWB10202 | Effective Communication | 2 | 2 | 1 | 0 | 3 |
| UQ*1**01 | Co-Curriculum I | 1 | 0 | 0 | 3 | 3 |
| UWA10102 | Islamic Studies/ | 2 | 2 | 0 | 0 | 2 |
| UWA10202 | Moral Studiesl | | | | | |
| BEE31202 | Creativity and Innovation | 2 | 2 | 1 | 0 | 3 |
| UQ*1**01 | Co-Curriculum II | 1 | 0 | 0 | 3 | 3 |
| UWS10103 | Nationhood and Current Development of Malaysia | 3 | 3 | 0 | 0 | 3 |
| UWS 10303 | **Malaysian Studies and Culture | | | | | |
| UWB10*02 | Foreign Language | 2 | 2 | 1 | 0 | 3 |
| 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 |
| BEC10102 | Computer Programming | 2 | 1 | 1 | 3 | 5 |
| BPK20802 | Entrepreneurship | 2 | 2 | 1 | 0 | 3 |
| BPK30902 | Engineering Economy | 2 | 2 | 1 | 0 | 3 |
| BEE30103 | Engineering Management | 3 | 3 | 1 | 0 | 4 |
| BEE10202 | Engineer and Society | 2 | 2 | 1 | 0 | 3 |
| BEE30304 | Industrial Training | 4 | 0 | 0 | 0 | 8 weeks |
| BEL10103 | Electric Circuits | 3 | 2 | 1 | 3 | 6 |
| BEL10203 | Analog Electronics | 3 | 3 | 1 | 0 | 4 |

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| | | | | | | |
|----------|--|-----|-----|----|----|-----|
| BEE10403 | Electrical Technology | 3 | 3 | 1 | 0 | 4 |
| BEE10501 | Engineering Practices | 1 | 0 | 0 | 3 | 3 |
| BEL20303 | Digital Electronics | 3 | 3 | 1 | 0 | 4 |
| BEF25503 | Power Systems | 3 | 3 | 1 | 0 | 4 |
| BEE20801 | Electronics Engineering Laboratory I | 1 | 0 | 0 | 3 | 3 |
| BEH22003 | Instrumentation and Control Systems | 3 | 3 | 1 | 0 | 4 |
| BEB20303 | Electromagnetic Fields and Waves | 3 | 3 | 1 | 0 | 4 |
| BEE20901 | Electronics Engineering Laboratory II | 1 | 0 | 0 | 3 | 3 |
| BEB31803 | Electronic Communication Systems | 3 | 3 | 1 | 0 | 4 |
| BEL30403 | Electronics Circuit Analysis and Design | 3 | 3 | 1 | 0 | 4 |
| BEC30503 | Digital System Design | 3 | 2 | 1 | 3 | 6 |
| BEE31002 | Electronics Engineering Laboratory III | 2 | 0 | 0 | 6 | 6 |
| BEB30603 | Digital Signal Processing | 3 | 3 | 1 | 0 | 4 |
| BEC30303 | Computer Architecture and Organisation | 3 | 3 | 1 | 0 | 4 |
| BEC30403 | Microprocessor and Microcontroller | 3 | 3 | 1 | 0 | 4 |
| BEE31002 | Electronics Engineering Laboratory IV | 2 | 0 | 0 | 6 | 6 |
| BEE40602 | Final Year Project I | 2 | 0 | 0 | 6 | 6 |
| BEE40704 | Final Year Project II | 4 | 0 | 0 | 12 | 12 |
| BEC20602 | Data Structures and Algorithms | 2 | 1 | 1 | 3 | 5 |
| BEC20702 | Object Oriented Programming | 2 | 1 | 1 | 3 | 5 |
| BEC30803 | Database Systems | 3 | 2 | 1 | 3 | 6 |
| BEC40903 | ASIC Design | 3 | 2 | 1 | 3 | 6 |
| BEC41003 | Computer Networks | 3 | 3 | 1 | 0 | 4 |
| BEC41103 | Advanced Microcontroller | 3 | 3 | 1 | 0 | 4 |
| BEC41201 | Networks & Adv. Microcontroller Laboratory | 2 | 0 | 0 | 6 | 6 |
| BEC41302 | Operating Systems | 2 | 2 | 1 | 0 | 3 |
| BEC41403 | Multimedia Engineering | 3 | 2 | 1 | 3 | 6 |
| BEC4**03 | Specialization Elective I | 3 | 3 | 1 | 0 | 4 |
| BEC4**03 | Specialization Elective II | 3 | 3 | 1 | 0 | 4 |
| BEC4**03 | Specialization Elective III | 3 | 3 | 1 | 0 | 4 |
| | TOTAL | 132 | 103 | 39 | 75 | 217 |



PROGRAMME SPECIFICATIONS

ELECTIVES COURSES

| CODE | COURSES | CREDIT | L | T | P | SLT |
|----------|-----------------------------|--------|---|---|---|-----|
| BEC41503 | Artificial Intelligence | 3 | 3 | 1 | 0 | 4 |
| BEC41603 | Computer System Engineering | 3 | 3 | 1 | 0 | 4 |
| BEC41703 | Embedded System Design | 3 | 3 | 1 | 0 | 4 |
| BEC41803 | Software Engineering | 3 | 3 | 1 | 0 | 4 |
| BEC41903 | Computer Security | 3 | 3 | 1 | 0 | 4 |
| BEC42003 | VLSI System Design | 3 | 2 | 1 | 3 | 6 |
| BEB30603 | Applied Electromagnetics | 3 | 3 | 1 | 0 | 4 |

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

** International student only

MATRIX OF COURSE vs LEARNING OUTCOME

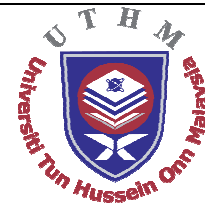
| Matrix of Course vs Learning Outcome | | | | LEARNING OUTCOME | | | | | | | | | | |
|--------------------------------------|----------|--|--------|------------------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|
| NO | CODE | COURSE | CREDIT | PLO 1 | PLO 2 | PLO 3 | PLO 4 | PLO 5 | PLO 6 | PLO 7 | PLO 8 | PLO 9 | PLO 10 | PLO 11 |
| Domain | | | | C | C | P | C | P | A | P | A | A | P | A |
| GENERIC SKILLS | | | | | | CS | CTPS | TS | LL | KK | EM | LS | | |
| 1 | UWA10302 | Islamic and Asian Civilisation | 2 | x | | x | | | | | x | | | |
| 2 | UWB10101 | English For Academic Purposes ** | 1 | x | | x | | | x | | | | | |
| 3 | UWB20302 | Technical Writing | 2 | x | | x | | | x | | | | | |
| 4 | UWS10202 | Ethnic Relations | 2 | x | | | | x | | | x | | | |
| | UWB11202 | **Malay Language | 2 | | | | | | | | | | | |
| 5 | UWB10202 | Effective Communication | 2 | x | | | | x | x | | | | | |
| 6 | UQ*1**01 | Co-Curriculum I | 1 | | x | | | x | x | | | | | |
| 7 | UWA10102 | Islamic Studies/ | 2 | x | | x | | | | | x | | | |
| | UWA10202 | Moral StudiesI | | x | | x | | | | | x | | | |
| 8 | BEE31202 | Creativity and Innovation | 2 | x | | | | x | | | | x | | |
| 9 | UQ*1**01 | Co-Curriculum II | 1 | | x | | | x | x | | | | | |
| 10 | UWS10103 | Nationhood and Current Development of Malaysia | 3 | x | | | | | | | x | x | | |
| | UWS10303 | Malaysian Studies and Culture ** | 3 | | | | | | | | | | | |
| 11 | UWB10*02 | Foreign Language | 2 | x | | | | | x | | x | | | |
| 12 | BWM10103 | Engineering Mathematics I | 3 | x | | | x | | x | | | | | |
| 13 | BWM10303 | Engineering Mathemaitcs IIE | 3 | x | | | x | | x | | | | | |
| 14 | BWM20403 | Engineering Mathematics III | 3 | x | | | x | | x | | | | | |
| 15 | BMW30602 | Engineering Mathematics IV | 2 | x | | | x | | x | | | | | |
| 16 | BWM20502 | Engineering Statistics | 2 | x | | | x | | x | | | | | |
| 17 | BEC10102 | Computer Programming | 2 | x | | | | x | x | | | | | |
| 18 | BPK20802 | Entrepreneurship | 2 | | | | x | | | x | | x | | |

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|---------------------------|----------|--|------------|-----------|-----------|-----------|-----------|-----------|-----------|----------|-----------|-----------|-----------|-----------|
| 19 | BPK30902 | Engineering Economy | 2 | | | | x | | | x | | x | | |
| 20 | BEE30103 | Engineering Management | 3 | x | | x | | | | | | x | | |
| 21 | BEE10202 | Engineer and Society | 2 | x | | | | x | | | x | | | |
| 22 | BEE30304 | Industrial Training | 4 | | x | x | | | | | x | | | |
| 23 | BEL10103 | Electric Circuits | 3 | | x | | | x | x | | | | | |
| 24 | BEL10203 | Analog Electronics | 3 | | x | x | | | | | | | | x |
| 25 | BEE10403 | Electrical Technology | 3 | | x | | | x | | | | | | x |
| 26 | BEE10501 | Engineering Practices | 1 | | x | | | x | | | | x | | |
| 27 | BEL20303 | Digital Electronics | 3 | | | | x | | | | | | x | x |
| 28 | BEF25503 | Power Systems | 3 | x | | | | | x | | | | x | |
| 29 | BEE20801 | Electronics Engineering Laboratory I | 1 | | x | | | x | | | | x | | |
| 30 | BEH22003 | Instrumentation and Control Systems | 3 | | | x | x | | | | | | | x |
| 31 | BEB20303 | Electromagnetic Fields and Waves | 3 | | | | x | x | | | x | | | |
| 32 | BEE20901 | Electronics Engineering Laboratory II | 1 | | x | | | x | | | | x | | |
| 33 | BEB31803 | Electronic Communication Systems | 3 | | x | x | | | | | x | | | |
| 34 | BEL30403 | Electronics Circuit Analysis and Design | 3 | | | | x | | | | | | x | x |
| 35 | BEC30503 | Digital System Design | 3 | | x | | | | | | | x | x | |
| 36 | BEE31002 | Electronics Engineering Laboratory III | 2 | | x | | | x | | | | x | | |
| 37 | BEB30603 | Digital Signal Processing | 3 | | | x | x | | | | x | | | |
| 38 | BEC30303 | Computer Architecture and Organisation | 3 | | x | x | | | | | | | | x |
| 39 | BEC30403 | Microprocessor and Microcontroller | 3 | | | | x | | | | | | x | x |
| 40 | BEE31002 | Electronics Engineering Laboratory IV | 2 | | x | | | x | | | | x | | |
| 41 | BEE40602 | Final Year Project I | 2 | | x | x | | | x | | | | | |
| 42 | BEE40704 | Final Year Project II | 4 | | | | x | | | x | x | | | |
| 43 | BEC20602 | Data Structures and Algorithms | 2 | x | | x | | | | | | x | | |
| 44 | BEC20702 | Object Oriented Programming | 2 | x | | x | | | | | | x | | |
| 45 | BEC30803 | Database Systems | 3 | x | | | | | | x | | | x | |
| 46 | BEC40903 | ASIC Design | 3 | | x | | | | x | | | | x | |
| 47 | BEC41003 | Computer Networks | 3 | | | | x | | | | | | x | x |
| 48 | BEC41103 | Advanced Microcontroller | 3 | | | | x | | x | | | | x | |
| 49 | BEC41201 | Networks and Adv. Microcontroller Laboratory | 2 | | x | | | x | | | | x | | |
| 50 | BEC41302 | Operating Systems | 2 | x | | | | | | | | | x | x |
| 51 | BEC41403 | Multimedia Engineering | 3 | | x | | | | | x | | | x | |
| 52 | BEC41503 | Artificial Intelligence | 3 | | x | | | | x | | | | x | |
| 53 | BEC41603 | Computer Systems Engineering | 3 | | x | | | | | | | | x | x |
| 54 | BEC41703 | Embedded Systems Design | 3 | | | | x | | | | | | x | x |
| 55 | BEC41803 | Software Engineering | 3 | | | x | x | | | x | | | | |
| 56 | BEC41903 | Computer Security | 3 | | | | x | | | | | | x | x |
| 57 | BEC42003 | VLSI Systems Design | 3 | | | | x | | | | | x | x | |
| 58 | BEH30603 | Applied Electromagnetics | 3 | | x | | | | | | x | | x | |
| Jumlah Keseluruhan | | | 132 | 23 | 21 | 16 | 20 | 16 | 18 | 6 | 13 | 15 | 17 | 12 |



PROGRAMME SPECIFICATIONS

DELIVERY METHOD

This program is disseminated by various delivery methods to fulfill the subject learning outcomes and in general, to prepare a 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

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 3 in "Malaysian University English Test" (MUET)
6. Application must be made by using Bachelor's Degree Award Application Form or Diploma 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 computer and electronic engineering field within the country itself or abroad as computer or electronic engineers. However, graduates are qualified to become an engineer in various industries such as computer industry, factory sectors and manufacturing, health industry, information technology 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



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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 elective subject of the programs comprise of academic staffs in 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.

3. Fees

The fee rates for this program are RM520.00 (Fee paid once during the whole program duration) and RM1,436.50 (Fee for every semester)

4. Faculty PROFORMA can be obtained from the University websites, www.uthm.edu.my

Prepared by:

Approved by:

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SHAMSUL BIN MOHAMAD
Head of Computer Engineering Department
Faculty of Electrical and Electronic Engineering
Universiti Tun Hussein Onn Malaysia
Tel: 07-4537552
Date: 24 June 2010

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Prof. Hj Ayob bin Hj Johari
Dean
Faculty of Electrical and Electronic Engineering
Universiti Tun Hussein Onn Malaysia
Tel: 07-4537500
Date:

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