澳門大學
UNIVERSIDADE DE MACAU
UNIVERSITY OF MACAU

持續進修中心
Centro de Educação Contínua
Centre for Continuing Education

Diploma in Electronic Engineering

General Description and Objectives

In response to practical needs of professional development in electronics engineering, CCE are decided to launch a one-year diploma programme (part-time mode) in electronics engineering. The programme mainly covers a range of topics including Engineering Mathematics, Electronic Circuit, Microprocessor and Microcontroller, Embedded System, Internet of Things (IOT) Technology. This programme is prerequisite for the Higher Diploma in Electronics Engineering which will be launched later. The student who has completed this Diploma will be eligible to apply for the one year Higher Diploma programme (part-time mode) in in Electronics Engineering.

* The one year Higher Diploma programme in Electronics Engineering is subject to approval and sufficient number of enrolled students.

On the completion of this programme, the students will be able to:

a. Have the ability to think in a critical and evaluative manner and to consider a broad perspective, in order to solve generic technical and engineering problems;

b. Have a thorough ground in the engineering mathematics and embedded system;

c. Perform a range of general electronics engineering duties with supervision.

Modules of Diploma	Lecture Hours
• Engineering Mathematics	36 hours
• Electronic Circuit	36 hours
• Microprocessor and Microcontroller	36 hours
• Embedded System	36 hours
• Internet of Things (IOTs) Technology	36 hours

持續進修發展計劃
Programa de Desenvolvimento e Aperfeiçoamento Contínuo
2017-2019

齊進修 創未來

課程編號: 1907320241-0
2017-2019 “持續進修發展計劃”
獲批准之項目，相關報讀詳情請翻閱背頁

網址： http://cce.um.edu.mo/ 查詢電話： 8822-4545 電郵查詢： cce.enquiry@um.edu.mo 圖文傳真： 2883-8321

Updated on ： 2019 年 11 月 12 日

Payment Information

Application Fee	MOP 100.00 (this fee is not included in the DSEJ Continuing Education Scheme, it can be settled by cheque, cashier' s order or VISA/MASTER card)
Payment Method	1. By cheque/cashier' s order, payable to "University of Macau" 2. By VISA/MASTER card (online payment available) 3. By DSEJ Continuing Education Scheme (if applicable), applicant must present a valid Macau ID card for application in person
Documents required	1. Application form 2. 1 copy of ID card/other appropriate identification documents 3. Academic Qualification
Address	The Centre for Continuing Education Ground Floor, BOC Centennial Building, University of Macau, E3, Avenida da Universidade, Taipa, Macau
Office Hours	Mon — Fri 9:30 — 21:00; Sat 10:00-17:00; Sun 9:30-13:00 (Closed on Macao Public Holidays)

【Application will be closed once all seats are filled】

For seat reservation, please fill out the online application form and you will be confirmed by email.

【Alumni and Retired Staff Privilege】Cardholders of "UM Alumni Card" or "Retired Staff Card" can enjoy a 20% discount on tuition fee. Quota for this offer is limited for each course and is available on a first-come-first-served basis. This privilege cannot be used with DSEJ Continuing Education Scheme. CCE reserves the right to make final judgment on the dispute and otherwise in respect of this offer. For any enquiries, please contact us.

【校友及退休職員優惠】凡持有由本校發出之「澳門大學校友卡」或「澳大退休職員證」，報讀此課程可享學費 8 折優惠，每課程均設優惠限額，先到先得，額滿即止，恕不另行通知。此優惠不能與持續進修發展計劃進修資助同時使用。本中心保留對此優惠的最終決定權。如有疑問請致電查詢。

Notice

Application Deadline	2019/12/12
Lecture Date (s) / Time	2019/12/17 — 2020/06/24 Monday, Wednesday & Thursday 19:00 — 22:00
Requirement	A candidate must have passed senior high school standard or equivalent
Assessment Method	The assessment is based on assignment and examination
Instructor and Instructing Language	From University of Macau and CEM; English, supplemented with Cantonese
Instructing Materials	English teaching materials
Lecture Hours	180
Tuition Fee	MOP22,000 (Student has to pay the material fee of MOP500)
Venue	University of Macau

1. Eligibility of DSEJ Continuing Education Scheme: Macao residents who are 15 years old or above, and are beneficiaries of DSEJ Continuing Education Scheme.
2. More information of DSEJ Continuing Education Scheme, please visit DSEJ' s website: www.dsej.gov.mo/pdac/2017/index.php or contact them at Tel: 2842 5199.
3. The Centre reserves the right to amend the course details.
4. The Centre reserves the right to postpone or cancel the course in case of insufficient enrolments. Refund information is available in our website: http://www.umac.mo/cce/notice.html.
5. Certificate: Certificate will be issued to those students who have attended 80% of the entire programme and got a passing grade in the examination of each course. If examination is exempted for the course, attendance certificate will be issued to those students who have attended 80% of the entire programme. If a student who is absent from class and applies for justifiable absence, he/she must provide valid reasons and supporting documents. Medical certificate is required for health reason. Applicant should submit the application form to the Centre within 10 days after the first day of class absence. Applications are subject to the approval of the Centre.
6. For voluntary withdrawal, applicants have to follow the withdrawal regulations of the Centre. More information is available in our website: http://www.umac.mo/cce/notice.html.

Course Description for the Diploma in Electrical Engineering

Electronics Mathematics (36 hours)

This course is about the mathematics that is most widely used in the electronics engineering. The topics covered linear algebra and ordinary differential equations (ODEs), Probability and Statistics and calculus approaches to solving systems of equations.

1. Linear Algebra
2. Calculus
3. Complex variables
4. Ordinary Differential Equations
5. Partial Differential Equations
6. Probability and Statistics

Electronic Circuit (36 hours)

This course introduce the Basic concepts of amplifiers and Oscillators. Filters. AM and FM modulators and demodulators. The Basic logic circuits including AND, OR, NOT gates; Compound logic circuits - NAND, NOR. TTL and CMOS technology. Counters. A/D and D/A conversion and other Programmable logic components are also introduced in this course.

1. Basic concepts of amplifiers: current and voltage sources. Basic amplifier circuits with bipolar and field-effect transistors
2. Multistage amplifiers: current and voltage amplification. Darlington amplifier. Differential amplifier
3. Power amplifiers: class A, B and AB. Negative and positive feedback.
4. Oscillators. Filters.
5. AM and FM modulators and demodulators
6. Operational amplifiers: inverting, noninverting, summing and differential.
7. RC integrators and Derivators
8. Multivibrators: bistable, monostable, astable and Schmitt trigger, generator of saw-tooth and staircase waves.
9. Basic logic circuits -AND, OR, NOT gates
10. Compound logic circuits - NAND, NOR. TTL and CMOS technology.
11. Counters. A/D and D/A conversion. Programmable logic components.

Microprocessor and Microcontroller (36 hours)

This course introduce the Basic concepts of microprocessor (CPU) and microcontroller. The following topics have been covered: Microprocessor Architecture, Instruction Set and Assembly Language Programming, I/O Interface, Interfacing with Advanced devices, Communication Interface, Introduction to Microcontrollers, Real Time Control, the Arduino microcontroller architecture and Bluetooth technology

1. Microprocessor Architecture
2. Instruction Set and Assembly Language Programming
3. I/O Interface
4. Interfacing with Advanced devices
5. Communication Interface
6. Introduction to Microcontrollers
7. Real Time Control
8. The Arduino microcontroller architecture
9. Bluetooth technology

Course Description for the Diploma in Electrical Engineering

Embedded System (36 hours)

The purpose of the course is to provide the students with the basic information about embedded systems which can be defined as a control system or computer system designed to perform a specific task.

1. Embedded Linux Systems
2. C++ Programming
3. Data Structures and Logic Analysis
4. Linux Internals and TCP/IP Networking
5. Micro-controllers (PIC) based Application Development

Internet of Things (IOTs) Technology (36 hours)

1. Core concepts and networking protocols for IoT applications
2. Application areas for Internet of Things with resource-constrained devices (such as sensors and actuators)
3. Networking protocols for collecting sensor data from resource-constrained, connected devices to cloud systems
4. Practical programming of IOTs devices
5. Mini Project

Tentative Course Schedule

Month	Date						
2019	S	M	T	W	T	F	S
十一月						1	2
	3	4	5	6	7	8	9
	10	11	12	13	14	15	16
	17	18	19	20	21	22	23
	24	25	26	27	28	29	30
十二月	1	2	3	4	5	6	7
	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30	31				

Month	Date						
2020	S	M	T	W	T	F	S
January				1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30	31	
February							1
	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
March	1	2	3	4	5	6	7
	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30	31				
April				1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30		
May						1	2
	3	4	5	6	7	8	9
	10	11	12	13	14	15	16
	17	18	19	20	21	22	23
	24	25	26	27	28	29	30
	31						
June		1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30				