

Ming Chuan University Department of Electronic Engineering  
Course Outline for all students entering in 2009

Course	Credits	Hours	1 <sup>st</sup> year				2 <sup>nd</sup> year				3 <sup>rd</sup> year				4 <sup>th</sup> year				Note		
			Fall		Spring		Fall		Spring		Fall		Spring		Fall		Spring				
			class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	class	lab			
Core Required Courses	Chinese Literature: Appreciation And Creative Writing	4	4	2		2															
	Practical English 1	2	3	2	1																1
	Practical English 2	2	3			2	1														
	Practical English 3	1	2					1	1												
	Practical English 4	1	2							1	1										
	English for Business Communication 1	1	2									1	1								
	English for Business Communication 2	1	2											1	1						
	Practical English of Professionals 1	0	2													1	1				
	Practical English of Professionals 2	0	2															1	1		
	General Ed	12	12																		
	Physical Education (1)~(6)	0	12	2		2		2		2		2		2							
	Implementing Service-Learning	0	1																		4
	<b>Subtotal</b>	24	47	6		6		3		3		3		3							
Professional Required Courses	Calculus	6	8	3	1	3	1														
	Physics I	3	3	3																	
	Physics Laboratory I	1	3	1	2																Computer course
	Concept of Computer Science	3	5	3	2																Computer course
	Introduction to Information Technology	1	1	1																	
	Linear Algebra	3	3	3																	
	Physics II	3	3			3															
	Physics Laboratory II	1	3			1	2														Computer course



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				Fall		Spring		Fall		Spring		Fall		Spring		Fall		Spring		
				class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	
IC Chip and System Program	Digital System Design and Laboratory	3	4					2	2											Computer course (Program core course)
	Programming Design II	3	5					3	2											Computer course
	Probability and Statistics	3	3					3												
	Communication System	3	3									3								
	Digital Signal Processing	3	3									3								
	Computer organization	3	3									3								(Program core course)
	Data Structure	3	3									3								Computer course
	Introduction to VLSI Design	3	4									3	1							Computer course (Program core course)
	Electronic Circuit Design	3	3									3								
	Control System	3	3											3						
	Digital Image Processing	3	3											3						Computer course
	VLSI Design	3	3											3						
	Analog IC Design	3	3											3						
	FPGA/CPLD Design	3	4											3	1					Computer course
	Introduction to Computer Networks	3	3													3				
	Robotic Control	3	3													3				Computer course
	Computer Vision	3	3													3				
	Artificial Intelligence	3	3													3				
	Neural Networks	3	3													3				
	Chip Design Practices	3	3													3				Computer course
Embedded Systems	3	3															3		Computer course	
Digital Communication	3	3															3			
Optics and Optical Design	3	3							3										Computer course	
Electromagnetics II	3	3							3										(Program core course)	

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				Fall		Spring		Fall		Spring		Fall		Spring		Fall		Spring			
				class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	class	lab		
Electronic and semiconductor or device program	Introduction to Electronic Materials	3	3							3											
	Optoelectronic Devices	3	3									3									(Program core course)
	Introduction to Semiconductor Devices	3	3									3									(Program core course)
	Electromagnetic Wave	3	3									3									
	Complex Functions	3	3									3									
	Modern Physics	3	3											3							
	Introduction to Microwave Engineering	3	3											3							
	Semiconductor Measurement	3	3											3							
	Introduction to Semiconductor Processing	3	3													3					
	Introduction to Flat Display	3	3													3					
	Introduction to Antenna Engineering	3	3													3					
	Semiconductor Optics	3	3													3					
	Introduction to Numerical Electromagnetics	3	3													3					
	Semiconductor Thin Film Technology	3	3															3			
	Optical Fiber Communication	3	3																3		
Antenna Project	3	3																3			
Military Training Education I	0	4	2		2																1-semester courses
Nursing Education I	0	4	2		2																1-semester courses
Japanese I	4	6	2	1	2	1															
Military Training Education II	0	4					2		2												1-semester courses
Vector Calculus	3	3					3														Computer course

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			Fall		Spring		Fall		Spring		Fall		Spring		Fall		Spring		
			class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	
Intellectual Property Rights	2	2							2										
Optoelectronic	3	3									3								
Introduction to Telecommunication Engineering	3	3											3						
Numerical Analysis	3	3											3						
Solid State Electronics	3	3													3				
III-V compound semiconductor and photo- electronic devices	3	3													3				
Nano Electronic Devices	3	3															3		
Physical Training (7)~(8)	4	4													2		2	1-semester courses	
<b>Grand Total</b>	Subtotal Required Course Credits	87																	
	Subtotal Elective Course Credits	41																	
	Total	128																	

Graduation Requirements:

1. If students have not earned the equivalent of a B1 level English Certificate in the Common European Framework of Reference for Languages (CEFR) set by the Ministry of Education (defined by this University as: scoring 600 on the Test of English for International Communication (TOEIC) or passing the Intermediate level of the second-round examination of the General English Proficiency Test (GEPT), etc.), they are required to take the single-semester zero-credit courses of Applied English for Workplace I and Applied English for Workplace II. After completing the courses and obtaining a passing grade, they will be eligible for graduation.
2. The requirements of the Information Technology are as follows (Exact software version will depend on the system used in the current academic year.):
  - (1) English typing speed: 15 words/min or above (Practical level of the Techficiency Quotient Certification (TQC))
  - (2) TQC Practical level or above of Excel 2007 (or equivalent standard with other Information Technology Certificate)
  - (3) TQC Practical level or above of Word 2007 or PPT 2007 (select 1) (or equivalent standard with other Information Technology Certificate)
  - (4) For students who have not earned the above certificates to certify meeting the Information Technology graduation requirements, the School of Information Technology will offer a two-credit course of Applied Information Technology in the summer. After completing the course and obtaining a passing grade, students will then be eligible for graduation.

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3. Students who entered in and since the 2008-09 academic year need to complete at least 12 General Education course credits. General Education courses are divided into three areas: Humanities, Social Science, and Natural Science. Each area is divided into two subcategories: core and extended. Students need to take 1 two-credit course in both of the subcategories within each area to be eligible for graduation. Only 12 course credits will be counted toward graduation. Additional course credits earned in General Education courses are not counted toward graduation.
4. First-year undergraduate students (including first-year returning students) who entered in 2009-09 academic year need to complete Service Learning to be eligible for graduation. Students can select either course-based or recognition-based Service Learning and need to complete at least 16 hours of service learning, 2 hours of on-campus service learning-related seminar, 2 reflection reports, and attend 1 Reflection Activity or Achievement Presentation.
5. Courses from focused course programs set up by any individual IT department or cooperatively between IT and other Schools can be regarded as the EE professional elective courses under the approval of the department chair. Courses selected from other Schools can only be regarded as the EE professional elective courses under the approval of the department chair; otherwise, the credits cannot be counted as the graduation credits.
6. Students who fulfill the requirement of each program can apply for the corresponding certificate. Each program has its own regulation as follows:
  - (1) The VLSI and System Engineering Program: In order to get the program certificate, students must make at least seven elective courses, the program required courses include: Digital System Design and Lab, Computer Organization, Introduction to VLSI Design.
  - (2) The Electronic Components Program: In order to get the program certificate, students must make at least seven elective courses, the program required courses include: Electromagnetics II, Optoelectronic Devices, Introduction to Semiconductor Devices.
7. Education credits cannot be counted as the graduation credits.
8. Students can choose the courses from the EE master program, which can be counted as their graduation credits under the approval of the department chair.
9. The elective courses on this Course Outline may be counted toward total graduation credits by students who entered the university prior to the 2009 academic year.