Ming Chuan University Department of Electronic Engineering
Course Outline for all students entering in 2018

Course		Credits	Hours	1st year				2nd year				3rd year				4th 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 I	2	2	2																
	Chinese Literature: Appreciation And Creative Writing II	2	2			2														
	Practical English 1	0	2	1	1															1
	Practical English 2	0	2			1	1													
	Practical English 3	0	2					1	1											
	Practical English 4	0	2							1	1									
	English for Business Communication 1	2	3									2	1							
	English for Business Communication 2	2	3											2	1					
	Practical English of Professionals 1	2	3													2	1			
	Practical English of Professionals 2	2	3															2	1	
	General Ed	12	12																	2
	Physical Education (1)~(6)	0	12	2		2		2		2		2		2						
	Subtotal	24	48																	
Professional Required Courses	Calculus I	3	4	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
	Programming Design I	3	5			3	2													Computer course
	Calculus II	3	4			3	1													

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				class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	
Professional Required Courses	Physics II	3	3			3														
	Physics Laboratory II	1	3			1	2													Computer course
	Electronic Circuits I	3	3			3														
	Digital Logic Design	3	3			3														
	Programming Design II	3	3					3												Computer course
	Electronic Circuits II	3	3					3												
	Electronic Circuits Laboratory I	1	3					1	2											Computer course
	Engineering Mathematics I	3	3					3												
	Electronics I	3	3					3												
	Electromagnetics I	3	3					3												
	Digital System Design and Laboratory	3	3					3												Computer course
	Engineering Mathematics II	3	3							3										
	Electronics II	3	3							3										
	Electronic Circuits Laboratory II	3	4							3	1									Computer course
	Microprocessor Design and Laboratory	1	3							1	2									Computer course
	Electronic Circuits Laboratory III	1	3									1	2							Computer course
	Project Research I	3	3											3						
	Project Research II	3	3													3				
	Subtotal	62	81	13		16		13		10		4		3		3				
Total Required Course Credits (Electronic Engineering Department)		87																		

Elective Courses		Credits	Hours	1st year				2nd year				3rd year				4th 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	
IC Chip and System	Signals and Systems	3	3									3								Program core course
	Computer organization	3	3									3								
	Data Structure	3	3									3								Computer course
	Introduction to VLSI Design	3	3									3								Computer course (Program core course)
	Electronic Circuit Design	3	3											3						
	Communication Systems	3	3											3						
	Digital Image Processing	3	3											3						
	Microprocessor communication	3	3											3						
	Linear Circuit Design	3	3													3				
	Control System	3	3																	
	Analogous IC design	3	3															3		
	Embedded Systems	3	3															3		
Electronic and semiconductor device	Optoelectronic Devices	3	3									3								Program core course
	Introduction to Semiconductor Devices	3	3									3								Program core course
	Electromagnetic Wave	3	3									3								
	Introduction to solar cells	3	3											3						
	Introduction to Microwave Engineering	3	3											3						

Elective Courses		Credits	Hours	1st year				2nd year				3rd year				4th 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	
Electronic and semiconductor device	Semiconductor Measurement	3	3											3						
	Optoelectronic Design and Application	3	3											3						
	Introduction to Semiconductor Manufacuring Technology	3	3													3				
	Introduction to Flat Display	3	3													3				
	Semiconductor Thin Film Technology	3	3															3		
	Optical Fiber Communication	3	3															3		
Military Training Education I		0	2	2																
Japanese I		2	3	2	1															
Military Training Education II		0	2			2														
Japanese II		2	3			2	1													
Information Applications		2	4			2	2													Computer course
Military Training Education III		0	2					2												
Vector Calculus		3	3					3												
MATLAB Programming		3	3					3												Computer course
Engineering application software		3	3					3												Computer course
Probability and Statistics		3	3					3												
Linear Algebra		3	3					3												
Military Training Education IV		0	2							2										
Optics and Optical Design		3	3							3										Computer course
OrCAD Electronic Circuit Design		3	3							3										Computer course
Modern Physics		3	3							3										
Electromagnetics II		3	3							3										Program core course

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			class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	
Introduction to Electronic Materials	3	3									3								
Complex Functions	3	3									3								
Microcontrollers	3	3									3								Computer course
Microprocessor Fundamentals	3	3									3								
Microprocessor Laboratory	2	2									2								
Information theory and coding	3	3									3								
Synthesis Design I	4	4									4								
Optoelectronics	3	3											3						
Digital signal processing	3	3											3						
Introduction to Telecommunication Engineering	3	3											3						
Introduction to Random Processes	3	3											3						
Numerical Analysis	3	3											3						
VLSI Design	3	3											3						
Discrete Mathematics	3	3											3						
Radio wave	3	3											3						
FPGA/CPLD Design	3	3											3						Computer course
Communication experiment	3	3											3						
Workplace English	3	3											3						
Communication System Lab	3	3											3						
Global Positioning System and Navigation	3	3											3						
Remote Sensing of Oceanography	3	3											3						
Real-time operating system	3	3											3						Computer course
Synthesis Design II	4	4											4						
Green Energy Technology	3	3											3						
Interactive Technology	3	3													3				Computer course
Introduction to Data Compression	3	3													3				
Solid State Electronics	3	3													3				
Introduction to Computer Networks	3	3													3				
Computer Vision	3	3													3				
Chip Design Practices	3	3													3				Computer course

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				class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	class	lab	
Internship		3	3													3				
Physical Training (7)		2	2													2				
Embedded Systems		3	3															3		Computer course
Advanced Internship		3	3															3		
Practical Project of Electronics		3	3															3		
NANO Electronic Devices		3	3															3		
Physical Training (8)		2	2															2		
Grand Total	Subtotal Required Course Credits	86																		
	Subtotal Elective Course Credits	42																		
	Total	128																		

Graduation Requirements:

1. In accordance with the General Provisions for Study, undergraduate students need to satisfactorily complete Service Learning, meet the university-wide basic competencies of English, Information Technology, Chinese, and Sports, and pass the core competencies of their department to be eligible for graduation.
2. 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.
3. 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 also be regarded as the EE professional elective courses under the approval of the department chair with a limitation of at most 20 course credits.
4. When retaking the required course, students can choose those which are with the same course name or the same course content as substitutions under the approval of the department chair. These courses can be regarded as their graduation credits.
5. Students who fulfill the requirement of each courses groups can apply for the corresponding certificate. Each courses groups has its own regulation as follows:

   (1) The VLSI and System Engineering Courses Groups: In order to get the courses groups certificate, students must make at least seven elective courses, the program required courses include: Digital System Design and Lab, MATLAB Programming, Introduction to VLSI Design.

(2) The Electronic Components Courses Groups: In order to get the courses groups certificate, students must make at least seven elective courses, the program required courses include: Electromagnetics II, Optoelectronic Devices, Introduction to Semiconductor Devices.

6. 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.
7. Education credits cannot be counted as the graduation credits.
8. The elective courses on this Course Outline may be counted toward total graduation credits by students who entered the university prior to the 2015 academic year.