

# 電機工程學系碩士班

113 學年度

最低修業年限	一年
應修學分數	(一)、 專業課程24學分（含抵免學分）。 (二)、 以同等學歷入本班者，得由指導教授增加其畢業學分數。
應修（應選）課程及符合畢業資格之修課相關規定	(一)、 本班開設之論文研討2次。 (二)、 專業必修：6學分(必修科目一覽表如附件一)，必須皆為電機工程學系碩博士班、電信工程研究所、電控工程研究所(上述三個單位以下簡稱本系所)所開授之研究所課程。 (三)、 專業選修：18學分，其中9學分，必須皆為本系所所開授之研究所課程（ <b>含暑修課程</b> ）；其餘9學分，得選修 <b>台聯大（含本校）</b> 非暑修研究所課程。修課以電機、資訊相關之研究所課程為限，選修課程需經指導教授同意。
備註	

## 必修科目一覽表

組別	選課	必修科目
甲組	10 選2	1、超大型積體電路系統設計 2、類比積體電路設計 3、計算機結構 4、微機電系統技術導論 5、演算法 6、功率積體電路設計 7、通訊系統晶片設計 8、影像處理 9、醫學工程 10、數位信(訊)號處理
乙組	10 選2	1、演算法 2、計算機結構 3、嵌入式作業系統 4、計算機網路 5、排隊理論 6、機器學習 7、數位信(訊)號處理 8、雲端運算與巨量資料分析 9、隨機過程 10、資料科學

# Master's Degree of the Department of Electronics and Electrical Engineering

Academic Year 113

Minimum Term of Study	One Year
Minimum Credits	<p>A. 24 Credits (include credit transfer).</p> <p>B. Students who enter the Master's Degree with the same academic qualifications may have their graduation credits increased by their advisors.</p>
Curriculum and Regulations	<p>A. Students must select Seminars and Academic Dissertation Research offered by Institute of ECE for two times.</p> <p>B. Core courses: 6 credits (as listed in attachment), must consist of core courses offered by ECE M.S., Institute of Communications Engineering, and Institute of Electrical Control Engineering.</p> <p>C. Elective courses: 18 credits are required, 9 credits of which must consist of graduate courses offered by ECE Department (including courses during summer vacation). The other 9 credits can be acquired from courses which are not during summer vacation in University System of Taiwan (including NYCU). Students should take the courses which are master's courses related to electrical engineering and computer science, and should approved by their advisors.</p>
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## Required Courses List

Group	Mode	Required Courses
I	Two of Ten	VLSI System Design and Application, Analog IC Design, Introduction to Micro Electro Mechanical Systems, Computer Architecture, Algorithms, Power IC Design, Chip Design for Communication Systems, Digital Image Processing, Biomedical Engineering, Digital Signal Processing
II	Two of Ten	Algorithm, Computer Architecture, Embedded Operating Systems, Computer Network, Queuing Theory, Machine Learning, Digital Signal Processing, Cloud Computing and Big Data Analytics, Random Process, Data Science

## 電機工程學系碩士班(輔所)(乙組)

113 學年度

應修學分數	12 學分
應修（應選）課程	電機系碩博士班乙組必修科目任選 2 門，本系所（含電子所）課程任選 2 門。除滿足輔所修課規定外，應敦聘本組教授指導並完成研究論文撰寫。

# 電機工程學系博士班

113 學年度

最低修業年限	2 年
應修學分數	(一)、非逕博生：18學分(含抵免學分)。 (二)、逕博生：30學分(含逕博前修讀之學分)，其中至少18學分必須是本系所開設之課程。
應修(應選)課程及符合畢業資格之修課相關規定	(一)、本班開設之論文研討3次。逕博生可將碩士班修過之論文研討課程一併列入計算。丙組學生得修本班開設之論文研討二學期及生醫所規劃之生醫工程特論與論文研討抵免本班開設之論文研討課程各以1次為限。如有特殊情況得經指導教授同意後專案申請，由本班會議討論。 (二)、專業必修：9學分(必修科目一覽表如附件一)，須為本系所所開授之研究所課程。丙組學生經由指導教授同意得修習生醫工程研究所之課程作為專業必修學分。 (三)、專業選修：9學分，其中3學分必須是本系所所開設之 <u>研究所課程(含暑修課程)</u> ；其餘6學分，得選修 <u>台聯大(含本校)非暑修研究所課程</u> 。選修課程需經指導教授同意。 (四)、博士生畢業前須修習並通過本校語言中心開設之研究生英文課程兩門或通過電機學院博士班英語能力考核。
備註	

## 必修科目一覽表

組別	選課	必修科目
甲組	8 選3	1、超大型積體電路系統設計2、類比積體電路設計3、微機電系統技術導論、4 計算機結構5、演算法6、數位訊號處理7、功率積體電路設計8、通訊系統晶片設計
乙組	19 選3	1、演算法2、計算機結構3、嵌入式作業系統4、計算機網路5、排隊理論6、機器學習7、數位信(訊)號處理8、隨機過程9、雲端運算與巨量資料分析10、檢測與估計理論11、適應性訊號處理12、陣列訊號處理13、資料壓縮14、語音處理15、多媒體通訊16、聽語資訊處理17、影像處理18、小波理論與應用19、資料科學
丙組	14 選3	1、近代生醫電學2、神經彌補裝置3、超音波導論與應用4、生醫信號分析和模擬5、醫學影像學6、影像處理7、聽語資訊處理8、人體結構、功能、臨床及醫療器材9、生醫化學10、奈米與生物技術-原理與實作11、奈米生醫感測12、生物微型檢測技術13、生醫光學檢測-原理與實作14、生醫材料

# Doctoral Degree of the Department of Electronics and Electrical Engineering

Academic Year 113

Minimum Term of Study	Two Year
Minimum Credits	A. Ph.D. students (not direct admitted Ph.D.):18 credits (include credit transfer). B. Direct admitted Ph.D. students:30 credits (include the credits you get before direct admitted Ph.D. ) , and at least 18 credits must offered by Institute of ECE .
Curriculum and Regulations	A. Students must select Seminars and Academic Dissertation Research offered by Institute of ECE for three times. Students who are direct admitted Ph.D. can let the Seminars and Academic Dissertation already taken incorporate into calculation. Group C students have to study the seminar in this institute for at least two semesters. Special Topics on Biomedical Engineering and the seminar in the Institute of Biomedical Engineering can transfer credit points of the seminar in this institute and both of them are limited to once, respectively. In case of special circumstances, the application must be approved by the supervising professor and discussed at the meeting. B. Core courses: 9 credits must consist of core courses offered by Institute of ECE (as listed in attachment). Group C students can take the courses offered by Institute of Biomedical Engineering that are approved by their advisors . C. Elective courses: 9 credits. In additional to that, 3 of the elective courses must consist of <b>graduate courses</b> offered by Institute of ECE ( <b>including courses during summer vacation</b> ). <b>The other 6 credits can be acquired from courses which are not during summer vacation in University System of Taiwan (including NYCU)</b> . Elective course must approve by their advisors. D. All doctoral students must pass two Graduate English courses from Academic Writing Center or pass English proficiency test offered by the College of ECE.
Notes	

## Required Courses List

Group	Mode	Required Courses
I	Three of Eight	1.VLSI System Design and Application, 2.Analog IC Design, 3.Introduction to Micro Electro Mechanical Systems, 4.Computer Architecture, 5.Algorithms, 6.Power IC Design, 7.Chip Design for Communication Systems, 8.Digital Signal Processing
II	Three of nineteen	1.Algorithm, 2.Computer Architecture, 3.Embedded Operating Systems, 4.Computer Network, 5.Queueing Theory, 6.Machine Learning, 7.Digital Signal Processing, 8.Cloud Computing and Big Data Analytics, 9.Random Process, 10.Detection and Estimation Theory, 11.Adaptive Sign Processing, 12.Array Signal Processing, 13.Data Compression, 14.Digital Speech Processing, 15. Multimedia Communications, 16.Auditory and Acoustical Information Process, 17.Image Processing, 18.Wavelets Theory and Applications, 19. Data Science
III	Three of fourteen	1.Modern Bioelectricity 2Neural Prostheses 3Introduction to Ultrasound and Its Application 4.Biomedical Signal Analysis and Modeling 5. Medical Imaging 6.Image Processing 7.Auditory and Acoustical Information Process 8.Human Function Anatomy and Medical Instrument Application 9. Biomedical Chemistry 10. Nano and Biotechnology-Principle and Practice 11. Nano Biosensing 12. Biomedical Micro Analysis Systems 13. Biomedical Optical Biopsy-Principle 14. Biomedical Materials