

# 電機資訊國際碩士學位學程

106 學年度

最低修業年限	一至四年為原則
應修學分數	<p>1.專業科目 24 學分，在學期間，專題研討至少須通過三學期，個別研究至少須通過兩學期。一年畢業者，專題研討須通過二學期。</p> <p>2.2 門合計至少 4 學分華語語文課程（不計入畢業學分）。</p>
應修（應選）課程及符合畢業資格之修課相關規定	<p>1.專業科目包括下列第一類至第四類之課程及其最少學分數：</p> <p><b>第一類 --- 主修學程專業課程六學分。</b></p> <p><b>奈米元件與電路(Nanoelectronic devices and circuit)專業課程：</b> 十三選三，數位積體電路、積體電路設計實驗、射頻超大型積體電路設計、類比積體電路設計、嵌入式系統設計、記憶體系統、計算機架構/計算機結構、實體設計自動化、數位訊/信號處理、半導體記憶體、超大型積體電路系統設計、記憶體積體電路，半導體物理及元件(一)。</p> <p><b>通訊技術(Communication Technology)專業課程：</b> 十四選三，無線通訊系統設計/無線通訊系統設計與實作、無線網際網路、計算機網路、網路安全、光纖通訊、消息理論、網通服務導向架構、計算機架構/計算機結構、數位訊/信號處理、電磁數值學、物聯網核心技術/物聯網核心技術及應用專題、無線通訊、檢測與估計、排隊理論。</p> <p><b>光電與顯示技術 (Photonics and Display)專業課程：</b> 十三選三，幾何光學、光纖通訊、平面顯示器概論、顯示電子電路、光學系統導論、影像處理/數位影像處理、計算機架構/計算機結構、半導體雷射、臨床光學影像技術、奈米光電元件技術、光電子學(一)、光電子學(二)、半導體物理及元件(一)。</p> <p><b>生醫訊號與系統(Biomedical Signals and Systems) 專業課程：</b> 九選三，生醫電子與系統、嵌入式系統設計、神經彌補裝置、數位訊/信號處理、適應性訊號處理、影像處理/數位影像處理、計算機架構/計算機結構、神經心臟電生理、臨床光學影像技術。</p> <p><b>系統控制(System and Control)專業課程：</b> 九選三，數位訊/信號處理、計算機架構/計算機結構、嵌入式系統設計、3D 遊戲程式、智慧型控制、檢測與估計、機器學習、影像處理/數位影像處理、人工智慧。</p> <p><b>第二類 --- 共同專業選修課程九學分。</b> 共同專業課程包含第一類課程，及電機學院與資訊學院所開授之專業課程。</p> <p><b>第三類 --- 自由選修課程九學分。</b> 自由選修課程包含第二類課程，及台灣聯合大學系統(交通大學、清華大學、中央大學、陽明大學)各院系所開授之其他專業課程。 如擬選修外校或外院所開的課程，應填具「外校或外院課程認定申請表」，並由指導教授簽名及本學程主任核定，始得承認並列入畢業學分。所填具申請表應於當學期開學加退選截止日期前向本學程提出申請。</p> <p><b>第四類 --- 專題研討。在學期間至少須通過三學期；一年畢業者，須通過二學期。</b></p> <p>2.畢業前須修滿二門合計至少四學分華語語文課程(不計入畢業學分)。學生通過華語語文能力測驗者得免修華語語文課程。</p> <p>3.每學期須選修「個別研究」課程，由碩士論文指導教授評分，以評定學生之研究水準，但其學分數不計入前述規定之畢業學分內。畢業前該課程至少須有二學期成績為通過。</p> <p>4.完成碩士論文並通過畢業口試</p>

# EECS International Graduate Program Master Degree Curriculum

## Academic Year 2017

Minimum Term of Study	One Year
Minimum Credits	24 Credits
Curriculum and Regulations	<p>1. Major Technical Courses [6 credits] The major technical courses are determined by the Curriculum Committee of academic institutes in the ECE and CS Colleges. These courses are listed in the “List of Major Technical Courses” as appendix.</p> <p>(A) Common Technical Courses [9 credits] The common technical courses include all the major technical courses and other graduate-level technical courses offered by NCTU ECE &amp; CS Colleges.</p> <p>(B) Elective Courses [9 credits] The elective courses include all the common technical courses and all graduate level courses offered by the University System of Taiwan (UST). Accreditation of courses taken outside of Electrical Engineering and Computer Science areas must be approved by a student’s advisor or the director of EECS International Graduate Program.</p> <p>(C) Graduate Seminar Course [Mandatory, 0 credit] Every student must enroll in the graduate seminar course for at least three semesters before graduation. For those students who graduate in one year, they should take the seminar course in both semesters.</p> <p>2. Every student must take 2 courses or at least 4 credits of Chinese language courses (which cannot be counted toward fulfillment of EECS International Graduate Program) before and during their study at NCTU. Students who pass Test of Chinese as a Foreign Language (TOCFL) or other Chinese language proficiency test can waive the Chinese language course requirements.</p> <p>3. Every student should take an independent study course in every semester throughout their study at NCTU. Their performance in the independent study is evaluated by their thesis advisor. Every student must complete at least two independent study courses with passing grades before graduation. The independent study courses are not counted toward fulfillment of course requirements.</p> <p>4. A student who fails to complete the course requirements and/or pass the master degree examination within his/her term of study will be dismissed from the program. His/her enrollment at NCTU will be also terminated.</p>
Notes	<b>The appendix, list of Major Technical Courses, is applicable to all current students</b>

### Appendix: List of Major Technical Course (2017 Fall)

<b>Major Technical Courses for 5 Concentrations of EECS IGP</b>
<b>Concentration I : Nanoelectronic Devices and Circuit , ( 2 out of 13courses)</b>
Digital IC 數位積體電路
IC Lab Design 積體電路設計實驗
Analog IC Design 類比積體電路設計
Embedded System Design 嵌入式系統設計
RF VLSI 射頻超大型積體電路設計
Memory Systems 記憶體系統
Computer Architecture 計算機架構/計算機結構
Physical Design Automation 實體設計自動化
Digital Signal Processing 數位訊/信號處理
Semiconductor Memory 半導體記憶體
VLSI System Design and Application 超大型積體電路系統設計

Memory Circuit Design 記憶體積體電路
Semiconductor Physics and Devices (I) 半導體物理及元件(一)
<b>Concentration II : Communication Technology , ( 2 out of 14 courses)</b>
Wireless Communication System Design/ Wireless Communication Systems 無線通訊系統設計/ <u>無線通訊系統設計與實作</u>
Wireless Internet 無線網際網路
Computer Networks 計算機網路
Network Security 網路安全
Service-Oriented Architecture Technologies for Telecommunications 網通服務導向架構
Optical Fiber Communication 光纖通訊
Information Theory 資訊理論
Computer Architecture 計算機結構
Digital Signal Processing 數位訊/信號處理
Computational Electromagnetics 電磁數值學
Key Technologies for Internet of Things/ Key Technologies for Internet of Things and their applications 物聯網核心技術/物聯網核心技術及應用專題
Wireless Communication 無線通訊
Detection and Estimation 檢測與估計
Queuing Theory 排隊理論
<b>Concentration III : Photonics and Display( 2 out 13 courses)</b>
Semiconductor Laser 半導體雷射
Geometrical Optics 幾何光學
Optical Fiber Communications 光纖通訊
Introduction to Flat Panel Display 平面顯示器概論
Electronic Circuits for Display 顯示電子電路
Introduction to Optical Systems 光學系統導論
Image Processing /Digital Image Processing 影像處理/數位影像處理
Computer Architecture 計算機結構
Advanced Clinical Optical Imaging Technology 臨床光學影像技術
Nano-Photonics Technology 奈米光電元件技術
Optoelectronics (I)光電子學(一)
Optoelectronics (II)光電子學(二)
Semiconductor Physics and Devices (I) 半導體物理及元件(一)
<b>Concentration IV : Biomedical Signals and Systems ( 2 out 9 courses)</b>
Biomedical Circuit & Systems 生醫電子與系統
Embedded System Design 嵌入式系統設計
Neural Prostheses 神經彌補裝置
Digital Signal Processing 數位訊號處理
Adaptive Signal Processing 適應性訊號處理
Image Processing /Digital Image Processing 影像處理/數位影像處理
Computer Architecture 計算機結構
Neural and Cardiac Electrophysiology 神經心臟電生理
Advanced Clinical Optical Imaging Technology 臨床光學影像技術
<b>Concentration V: System and Control ( 2 out of 9 courses)</b>
Digital Signal Processing 數位訊號處理
Computer Architecture 計算機結構

Embedded System Design 嵌入式系統設計
3D Game Programming 3D 遊戲程式
Intelligent Control 智慧型控制
Detection and Estimation 檢測與估計
Machine Learning 機器學習
Image Processing /Digital Image Processing 影像處理/數位影像處理
Artificial Intelligence 人工智慧

## 電機資訊國際博士學位學程

106 學年度

最低修業年限	二年
應修學分數	18
逕博應修學分數	30 學分
應修（應選）課程及符合畢業資格之修課相關規定	<p>(1)畢業前須修畢並完成下列課程要求：</p> <ul style="list-style-type: none"> <li>● 專業科目至少 18 學分，其中包含電機資訊兩院專業課程 12 學分及其他選修專業課程 6 學分。</li> <li>● 逕博生畢業前至少應修滿含碩士修業期間 30 學分(不含論文研討)，其中至少 18 學分須為電機資訊兩院開設之專業科目。</li> <li>● 2 門合計至少 4 學分華語語文課程。通過華語語文能力測驗者或已獲得本校電機資訊國際碩士學位者，得免修華語課程；入學前已在本校或他校修習的華語課程，得視情形抵免本學程的華語語文課程。</li> <li>● 博一、博二每學期必選專題研討(不計入應修學分數)，畢業前至少有四學期專題研討及格成績。</li> </ul> <p>(2)博一、博二之選課均須經由指導教授或學程主任認可。</p> <p>(3)博士生入學第一學期結束前，須繳交經指導教授簽字同意之指導教授協議書(含選定之 3 門資格考核科目)。</p> <p>(4)選修非電機資訊兩院開設之選修專業課程，得經指導教授或學程主任認可。</p> <p>(5)由本校電機資訊兩院其他系所或台聯大系統轉入之博士生，經指導教授及學程主任同意，得酌予抵免學分數。</p>
備註	本修課規定適用於所有在學學生

## EECS International Graduate Program Doctoral Degree Curriculum Academic Year 2017

Minimum Term of Study	Two Years
Minimum Credits	18 Credits
Minimum Credits for Direct PhD	30 credits
Curriculum and Regulations	<p>(1) Complete and fulfill the following course requirements:</p> <ul style="list-style-type: none"> <li>● 12 credits (minimum) of technical courses from the Colleges of Electrical and Computer Engineering (ECE) or Computer Science (CS) and other 6 credits of technical courses-</li> <li>● Students get direct admission into doctoral program should complete 30 credits (not including seminar course) which should contain at least 18 credits of technical courses from the Colleges of Electrical and Computer Engineering (ECE) or Computer Science (CS).</li> <li>● Complete 2 courses or at least 4 credits of Mandarin Chinese courses. Students who pass Chinese proficiency tests or obtain the master degree from EECS International Graduate Program may waive up to 2 courses or 4 credits.</li> </ul>

	<ul style="list-style-type: none"> <li>● Doctoral students in their first and second years of study must take Seminar courses every semester (the credits do not count toward graduation requirements). Students must take and pass 4 Seminars (minimum) before graduation.</li> <li>(2) Before registering for courses, students in their first and second years of study must ask their advisor or the program director to approve their course selection.</li> <li>(3) Before the end of the first semester after enrollment, a student must submit an Advisor Agreement Form with three selected qualifying subjects approved by the thesis advisor.</li> <li>(4) Students who take technical course(s) outside the ECE and CS Colleges must get approval from their thesis advisors or the program director.</li> <li>(5) Transfer students from other departments in the ECE and CS Colleges or other university of UST (University System of Taiwan) may apply for credit exemption with the approval of their advisor and the program director.</li> </ul>
Notes	This curriculum is applicable to all current students