COMPUTER ENGINEERING (M.S.)

Admission Requirements

Admission to these programs is contingent upon admission to the Graduate School (http://bulletins.wayne.edu/graduate/general-information/admission/). All applicants whose B.S. degree is not from an ABET-accredited college or university are required to submit additional pertinent information, including results of the general test of the Graduate Record Examination (GRE), publications, and/or inventions.

Students with B.S. degrees from selected science and engineering undergraduate programs not specifically related to this discipline may be admitted into the master's program after completing a sequence of undergraduate courses designed to prepare them for the graduate curriculum.

ECE AGRADE Program

Outstanding undergraduates in the ECE department who meet eligibility criteria may enroll in the ECE AGRADE program. This program allows students to count up to 16 credits towards both the B.S. and M.S. degrees, enabling students to complete the B.S. and M.S. degrees within 5 years of full-time study. More information about eligibility, degree requirements, course selections, and policies may be found at https://engineering.wayne.edu/ece/programs/agrade.php

Program Requirements

The Master of Science in Computer Engineering degree requires a minimum of thirty credits. It is offered under plan Plan A: Thesis (p. 1), which includes a six credit thesis, or Plan C: Coursework (p. 2). For either plan, students may choose from courses in one or more areas of specialization within the ECE curriculum.

All course work must be completed in accordance with the regulations of the Graduate School (http://bulletins.wayne.edu/graduate/general-information/academic-regulations/) and the James and Patricia Anderson College of Engineering (http://bulletins.wayne.edu/graduate/college-engineering/academic-regulations/).

Plan A: Thesis

Code	Title	Credits
Required courses		
Select 4 ECE graduate courses in Major Area - Computer Engineering, including at least one at 7000 level. [1]		
ECE 5280	Introduction to Cyber-Physical Systems	
ECE 5425	Robotic Systems I	
ECE 5440	Traditional and Machine Learning-Based Computer-Controlled Systems	
ECE 5470	Control Systems II	
ECE 5560	Analysis and Design of Analog Integrated Circuits	
ECE 5620	Embedded System Design	
ECE 5650	Computer Networking and Network Programming	
ECE 5680	Computer-Aided Logical Design and FPGAs	
ECE 5690	Introduction to Digital Image Processing	
ECE 5770	Digital Signal Processing	
ECE 5960	Introduction to VLSI Systems	
ECE 7425	Robotics Systems II	
ECE 7500	Artificial Intelligence for Natural Language Processing	
ECE 7530	Advanced Digital VLSI Design	
ECE 7610	Advanced Parallel and Distributed Systems	
ECE 7650	Scalable and Secure Internet Services and Architecture	
ECE 7680	Advanced Digital Image Processing and Applications	
ECE 7690	Fuzzy Systems and Machine Learning	
ECE 7730	Telematics	
ECE 7860	Operation and Control of Modern Power Systems	
Elective courses		
The combined number of credits for Required and Elective courses must be at least 24.		
List of eligible elective courses:		
ECE 5000-7999 including courses in the Electrical Engineering, or Computer Engineering major area, ECE 5990 Directed Study (1 – 3 cr., repeatable up to 3 cr.), Special Topics courses ECE 5995 and ECE 7995 (repeatable up to 12 cr.), Industrial Internship ECE 6991 (1 cr., repeatable up to 3 cr.).		
Non-ECE courses: Up to 6 credits of elective credits may be taken in other WSU departments or transferred from another institution, including following:		
BME, ME, CHE, MSE or EVE 5000-7999 excluding directed study, research, or internship.		
Selected classes offered by the College of Engineering:		
EGR 5995	Special Topics in Engineering (repeatable up to 3 cr.)	
Selected classes offered by Department of Computer Science:		
CSC 5825	Introduction to Machine Learning and Applications	
CSC 7825	Machine Learning	
Selected classes offered by Department of Industrial Engineering:		
IE 7220	Advanced Statistical Methods	
IE 7710	Stochastic Processes	
PHY 5000-7999 excluding directed study, physics for teachers, research, and directed study, or internship.		
Selected classes offered by Department of Mathematics:		
MAT 5600	Introduction to Analysis I	
MAT 5610	Introduction to Analysis II	
MAT 5710	Introduction to Stochastic Processes	
MAT 5870	Methods of Optimization	
MAT 7600	Real Analysis I	
MAT 7610	Real Analysis II	
STA 5030	Statistical Computing and Data Analysis	
STA 6830	Design of Experiments	
STA 6840	Applied Regression Analysis	
Thesis course		
ECE 8999	Master's Thesis Research and Direction (This course can be taken either as a single 6-credit course during the last term in the program or as repeated courses, totaling 6 credits, during last two terms.)	

[1] Special Topics courses ECE 5995 and ECE 7995, depending on the courses subjects, may also be counted as courses in Major Area – upon approval by Graduate Program Director.

Plan C: Coursework

Code	Title	Credits
Required courses		
Select 5 ECE graduate courses in Major Area - Computer Engineering, including at least 2 at 7000 level. [1]		
ECE 5280	Introduction to Cyber-Physical Systems	
ECE 5425	Robotic Systems I	
ECE 5440	Traditional and Machine Learning-Based Computer-Controlled Systems	
ECE 5470	Control Systems II	
ECE 5560	Analysis and Design of Analog Integrated Circuits	
ECE 5620	Embedded System Design	
ECE 5650	Computer Networking and Network Programming	
ECE 5680	Computer-Aided Logical Design and FPGAs	
ECE 5690	Introduction to Digital Image Processing	
ECE 5770	Digital Signal Processing	
ECE 5960	Introduction to VLSI Systems	
ECE 7425	Robotics Systems II	
ECE 7500	Artificial Intelligence for Natural Language Processing	
ECE 7530	Advanced Digital VLSI Design	
ECE 7610	Advanced Parallel and Distributed Systems	
ECE 7650	Scalable and Secure Internet Services and Architecture	
ECE 7680	Advanced Digital Image Processing and Applications	
ECE 7690	Fuzzy Systems and Machine Learning	
ECE 7730	Telematics	
ECE 7860	Operation and Control of Modern Power Systems	
Elective courses		
The combined number of credits for Required and Elective courses must be at least 30.		
List of eligible elective courses:		
ECE 5000-7999 including courses in the Electrical Engineering, or Computer Engineering major area, ECE 5990 Directed Study (1 – 3 cr., repeatable up to 3 cr.), Special Topics courses ECE 5995 and ECE 7995 (repeatable up to 12 cr.), Industrial Internship ECE 6991 (1 cr., repeatable up to 3 cr.).		
Non-ECE courses: Up to 6 credits of elective credits may be taken in other WSU departments or transferred from another institution, including following:		
BME, ME, CHE, MSE or EVE 5000-7999 (excluding directed study, research, or internship.		
Selected classes offered by the College of Engineering:		
EGR 5995	Special Topics in Engineering (repeatable up to 3 cr.)	
Selected classes offered by Department of Computer Science:		
CSC 5825	Introduction to Machine Learning and Applications	
CSC 7825	Machine Learning	
Selected classes offered by Department of Industrial Engineering:		
IE 7220	Advanced Statistical Methods	
IE 7710	Stochastic Processes	
PHY 5000-7999 excluding directed study, physics for teachers, research, and directed study, or internship.		
Selected classes offered by Department of Mathematics:		
MAT 5600	Introduction to Analysis I	
MAT 5610	Introduction to Analysis II	
MAT 5710	Introduction to Stochastic Processes	
MAT 5870	Methods of Optimization	
MAT 7600	Real Analysis I	
MAT 7610	Real Analysis II	
STA 5030	Statistical Computing and Data Analysis	
STA 6830	Design of Experiments	
STA 6840	Applied Regression Analysis	

[1] Special Topics courses ECE 5995 and ECE 7995, depending on the courses subjects, may also be counted as courses in Major Area – upon approval by Graduate Program Director.