

MASTER OF TELECOMMUNICATIONS AND SOFTWARE ENGINEERING

Collaborative program with the Department of Computer Science

The Master of Telecommunications and Software Engineering (M.T.S.E.) is a course-only degree program that prepares students for professional practice in telecommunications and information technologies. The program, jointly offered by the Department of Electrical and Computer Engineering (ECE) and Department of Computer Science (CS), can be completed in one year of full-time study. The M.T.S.E. is a professional master's degree requiring a minimum of 30 credit hours of adviser-approved coursework.

Admission requirements for this degree follow the existing admission requirements for master's degrees in the ECE department. A person holding a B.S.E.E., a B.S.CP.E., or a B.S.C.S. degree has the necessary broad background to undertake the M.T.S.E. program. A student without adequate background in specific areas is required to demonstrate proficiency in prerequisite courses; an abbreviated course list is given below.

Specific proficiency courses will be detailed for each student at the time of admission to the M.T.S.E. program. A student may demonstrate proficiency by successfully completing the courses or by demonstrating satisfactory performance in one or more special examinations administered by the department.

Prerequisites

Computer Science Prerequisites		(4)
CS 201	Accelerated Introduction to Computer Science ¹	4
Electrical and Computer Engineering Prerequisites		(21)
ECE 211	Circuit Analysis I	3
ECE 213	Circuit Analysis II	4
ECE 308	Signals and Systems	3
MATH 251	Multivariate and Vector Calculus	4
MATH 252	Introduction to Differential Equations	4
MATH 474	Probability and Statistics	3

¹ i.e. CS 115 and CS 116 combined

Curriculum

Master of Telecommunications and Software Engineering, Computer Engineering Concentration

Minimum Credits Required	30
Maximum 400-Level Credit	12
Minimum 500-Level Credit	18
Minimum ECE Coursework	15
Minimum CS Coursework	12
Maximum ECE Short Courses	4
Maximum Transfer Credit	9

Required Courses		(15-16)
ECE 513	Communication Engineering Fundamentals	3
CS 586	Software Systems Architectures	3
CS 587	Software Project Management	3
Select a minimum of one course from the following:		3-4
ECE 407	Introduction to Computer Networks with Laboratory	4
ECE 408	Introduction to Computer Networks	3
ECE 545	Advanced Computer Networks	3
ECE 541	Performance Evaluation of Computer Networks	3
or ECE 542	Design and Optimization of Computer Networks	
Software Engineering		(3)
Select a minimum of one course from the following:		3

CS 521	Object-Oriented Analysis and Design	3	
CS 537	Software Metrics	3	
CS 589	Software Testing and Analysis	3	
ECE 449	Object-Oriented Programming and Computer Simulation	3	
Telecommunication Systems			(3-4)
Select a minimum of one course from the following:			3-4
CS 544	Computer Networks II: Network Services	3	
CS 548	Broadband Networks	3	
CS 555	Analytic Models and Simulation of Computer Systems	3	
ECE 443	Introduction to Computer Security	4	
ECE 543	Computer Network Security	3	
ECE 544	Wireless and Mobile Networks	3	
ECE 546	Wireless Network Security	3	
ECE 547	Wireless Networks Performance Analysis	3	
Communications			(3)
Select a minimum of one course from the following:			3
ECE 504	Wireless Communication System Design	3	
ECE 508	Video Communications	3	
ECE 514	Digital Communication Principles	3	
ECE 515	Modern Digital Communications	3	
ECE 519	Coding for Reliable Communications	3	
Elective Courses			(4-6)
Select the remaining credit hours of coursework from the courses listed above or other courses approved by the faculty adviser ¹			4-6

¹ Students without a background in communications or software engineering would be best prepared by including: CS 450, CS 455, CS 487, ECE 403, ECE 405, ECE 406.

Other recommended courses include:

CS 588	Advanced Software Engineering Development	3
ECE 436	Digital Signal Processing I with Laboratory	4
ECE 437	Digital Signal Processing I	3
ECE 511	Analysis of Random Signals	3
ECE 516	Coding for Distributed Storage Systems	3
ECE 520	Information Theory and Applications	3
ECE 565	Computer Vision and Image Processing	3
ECE 568	Digital Speech Processing	3
ECE 569	Digital Signal Processing II	3
ECE 584	VLSI Architecture for Signal Processing and Communication Systems	3