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 is offered by the Department of Electrical and Computer Engineering (ECE) and 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.

Curriculum

Master of Telecommunications and Software Engineering, Computer Engineering Concentration

Requirement	Credits
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

Code	Title	Credit Hours
Core Courses		**(15)**
ECE 510	Internet of Things and Cyber Physical Systems	3
or ECE 503	5G Wireless Network: Architecture, New Radio, and Security	
ECE 513	Communication Engineering Fundamentals	3
or ECE 504	Wireless Communication System Design	
CS 586	Software Systems Architectures	3
or CS 587	Software Project Management	
ECE 541	Communications Networks Performance Analysis	3
or ECE 543	Computer Network Security	
ECE 545	Modern Internet Technologies	3
or ECE 408	Introduction to 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 448	Application Software Design	3
or ECE 528	Application Software Design	
ECE 449	Object-Oriented Programming and Machine Learning	3
or ECE 590	Object-Oriented Programming and Machine Learning	
Telecommunication Systems		**(3-4)**
Select a minimum of one course from the following:		3-4
CS 555	Analytic Models and Simulation of Computer Systems	3
ECE 407	Introduction to Computer Networks with Laboratory	4
or ECE 408	Introduction to Computer Networks	

ECE 443	Introduction to Computer Cyber Security	3
or ECE 518	Computer Cyber Security	
ECE 510	Internet of Things and Cyber Physical Systems	3
ECE 517	Modern Wireless Network Protocols and Standards	3
ECE 542	Design and Optimization of Computer Networks	3
ECE 543	Computer Network Security	3
ECE 544	Wireless and Mobile Networks	3
ECE 545	Modern Internet Technologies	3
ECE 546	Wireless Network Security	3
ECE 547		3
Communications		**(3)**
Select a minimum of one course from the following:		3
ECE 503	5G Wireless Network: Architecture, New Radio, and Security	3
ECE 504	Wireless Communication System Design	3
or ECE 406	Wireless Communications Systems	
ECE 508	Video Communications	3
ECE 513	Communication Engineering Fundamentals	3
ECE 514	Digital Communication Principles	3
ECE 515	Modern Digital Communications	3
ECE 519	Coding for Reliable Communications	3
ECE 520	Information Theory and Applications	3
Elective Courses		**(6)**
Select the remaining credit hours of coursework from the courses listed above or other courses approved by the faculty adviser [1]		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:

Code	Title	Credit Hours
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