Rice University Department of Electrical and Computer Engineering - MECE Degree Plan

Name: (First, Last)		**Student ID #:**		**Matriculation Term: (1st semester at Rice)**	
Full or Part Time:		**Specialization Area:**		**Intended Final Term:**	

What is your career objective that is guiding your course selection?

Requirement (credit hours)	**Course**	**Semester**	**Year**	**Credit Hours**	**Grade**
Foundations (3)					
Capstone (6)					
Communications (3)					
Software (6)					
Specialization (6)					
Elective (6)					
Seminar (required each semester in-residence at Rice University, credit hours earned do not apply towards degree requirements)					

Plan reviewed and approved by: _____ Date: _____

Submit to Nyetta Meaux (nyettameaux@rice.edu), Graduate Administrator, no later than 2 days before the ADD deadline.

MECE Degree Requirements

The MECE degree plan includes a summary of the MECE student's career objectives along with a listing of coursework taken in previous semesters and proposed for future semesters aimed to further the student's career objectives.

Coursework listed on the MECE degree plan must satisfy the following requirements:

- It must include at least 30 credit hours comprised of 10 courses of at least 3 credit hours each
    - Courses must be at the 500-level or above
- 27 credit hours must be taken at Rice University
- 3 courses (9 credit hours) fulfilling the Capstone Requirement:
    - 1 course (3 credit hours) to fulfill the Capstone Foundations requirement
    - 2 courses (6 credit hours) to fulfill the Capstone Experience Project requirement
- 1 course (3 credit hours) fulfilling the Engineering Communications Requirement
- 2 courses (6 credit hours) fulfilling the Engineering Software Development Requirement
- 2 courses (6 credit hours) in one area of specialization
- 2 courses (6 credit hours) fulfilling the Elective Requirements
- ELEC 698 each semester in residence at Rice University

The following course lists are suggestions for fulfilling each requirement.

Capstone Foundations Courses
ELEC 522 Advanced VLSI Design [Computer Engineering Capstone]
ELEC 551 Modern Communication Theory and Practice [Wireless Communications Capstone]
ELEC 578 Introduction to Machine Learning [Data Science Capstone]

Capstone Experience Courses
DSCI 535 Applied Machine Learning and Data Science Projects [Data Science Capstone]
ELEC 594 MECE Capstone Project [Computer Engineering Capstone and Wireless Communications Capstone]

Engineering Communications Courses
ENGI 501 Workplace Communication for Professional Master's Students in Engineering
ENGI 542 Professional Communication for Engineering Leaders
ENGI 555 Engineering Persuasion: How to Drive Decisions and Change

Engineering Software Development Courses
STAT 605 R for Data Science
STAT 606 SAS Statistical Programming
COMP 504 Graduate Object-Oriented Programming and Design
COMP 533 Introduction to Database Systems
COMP 534 Parallel Computing
COMP 539 Software Engineer Methodology
COMP 553 Big Data Management for Data Science
COMP 614 Computer Programming for Data Science
ELEC 512 Graduate Design and Analysis of Algorithms
ELEC 546 Introduction to Computer Vision
ELEC 550 Algorithmic Robotics
ELEC 552 Operating Systems and Concurrent Programming

Specialization Courses

Computer Engineering
ELEC 515 Machine Learning for Resource-Constrained Platforms
ELEC 516 Analog Integrated Circuits
ELEC 517 Microwave Engineering
ELEC 521 Advanced Digital Integrated Circuit Design
ELEC 522 Advanced VLSI Design
ELEC 523 Introduction to Microfabrication

ELEC 526 High Performance Computer Architecture
ELEC 527 VLSI Systems Design
ELEC 543 Advanced High-Speed System Design
ELEC 553 Mobile and Embedded System Design and Application
ELEC 554 Computer Systems Architecture
ELEC 574 Ubiquitous and Wearable Computing

Data Science
ELEC 502 Neural Machine Learning I
ELEC 515 Machine Learning for Resource-Constrained Platforms
ELEC 519 Data and Systems
ELEC 531 Statistical Signal Processing
ELEC 533 Introduction to Random Processes and Applications
ELEC 535 Information Theory
ELEC 546 Introduction to Computer Vision
ELEC 558 Digital Signal Processing
ELEC 575 Learning from Sensor Data
ELEC 576 A Practical Introduction to Deep Machine Learning
ELEC 578 Introduction to Machine Learning
ELEC 631 Advanced Topics in Signal Processing
ELEC 575 Learning from Sensor Data
ELEC 584 Fundamentals of Neuroengineering
COMP 540 Statistical Machine Learning

Wireless Communications
ELEC 531 Statistical Signal Processing
ELEC 533 Introduction to Random Processes and Applications
ELEC 535 Information Theory
ELEC 536 Architecture for Wireless Communications
ELEC 537 Communication Networks
ELEC 539 Introduction to Communication Networks
ELEC 542 The Application of Vector Space Methods and Other Advanced Techniques to DSP
ELEC 546 Introduction to Computer Vision
ELEC 547 Computer Vision
ELEC 549 Computational Photography
ELEC 551 Digital Communication
ELEC 558 Digital Signal Processing
ELEC 573 Network Science and Analytics
ELEC 574 Ubiquitous and Wearable Computing
ELEC 579 Computational Imaging

The following lists are Specialization Courses for specialization areas that must be approved by the academic advisor:

Neuroengineering
ELEC 502 Neural Machine Learning I
ELEC 523 Introduction to Microfabrication
ELEC 533 Introduction to Random Processes and Applications
ELEC 548 Machine Learning and Signal Processing for Neuro Engineering
ELEC 584 Fundamentals of Human Neuroimaging
ELEC 585 Fundamentals of Medical Imaging I
ELEC 587 Introduction to Neuroengineering
ELEC 588 Theoretical Neuroscience I: Biophysical Modeling of Cells and Circuits
ELEC 589 Neural Computation
ELEC 680 Nano-Neurotechnology
ELEC 682 Spotlight on Latest Neurotechnology
NEUR 582 Introduction to Computational Neuroscience

Photonics, Electronics, & Nano-devices
ELEC 517 Microwave Engineering

ELEC 523 Introduction to Microfabrication
ELEC 560 Physics of Sensor Materials and Nanosensor Technology
ELEC 562 Optoelectronic Devices
ELEC 563 Introduction to Solid State Physics I
ELEC 566 Nanophotonics and Metamaterials
ELEC 567 Nano-Optics
ELEC 569 Ultrafast Optical Phenomena
ELEC 571 Imaging at the Nanoscale
ELEC 572 Finite Element Method for Multiphysics Modeling
ELEC 603 Topics in Nanophotonics
ELEC 605 Computational Electrodynamics and Nanophotonics
ELEC 660 Quantum Information Science and Technology

Elective Courses

Free electives may be fulfilled by any 2 courses (6 credit hours) selected from the following:

- Departmental (ELEC) course offerings taught by ECE faculty;
- Research coursework, such as ELEC 590 or ELEC 591, when either is taken for at least 3 credit hours;
- Any of the following courses: COMP 532, ELEC 512, ELEC 520, ELEC 552, ELEC 556, ELEC 557, ENGI 510, ENGI 528, ENGI 529, ENGI 610, ENGI 615, or NSCI 511; or
- Any other course approved by the student's MECE academic advisor.