MASTER OF SCIENCE IN COMPUTER ENGINEERING, PLAN B

Requirements Effective Fall 2024

Code	Title	Credits
Select one group from the following:		
Group A: PORTFOLIO		
Regular Coursework (see list below) [1,2,3,4]		32
Portfolio Requirement [5]		
Group B: PROJECT		
Regular Coursework (see list below) [1,2,3,4]		27
ECE 695	Independent Study [6]	3
Program Total Credits:		**30-32**

A minimum of 30 credits are required to complete this program.

Regular Coursework

Code	Title	Credits
Any regular course approved by advisor and graduate committee		Var.
CS 4XX Any CS course at the 400-level (excluding courses numbered 482-499)		4
CS 5XX Any CS course at the 500-level (excluding courses numbered 582-599)		4
CS 6XX Any CS course at the 600-level (excluding courses numbered 682-699)		4
ECE 4XX Any ECE course at the 400-level (excluding courses numbered 482-499)		Var.
ECE 5XX Any ECE course at the 500-level (excluding courses numbered 582-599)		Var.
ECE 6XX Any ECE course at the 600-level (excluding courses numbered 682-699)		Var.
MATH 4XX Any MATH course at the 400-level (excluding courses numbered 482-499)		Var.
MATH 5XX Any MATH course at the 500-level (excluding courses numbered 582-599)		Var.
MATH 6XX Any MATH course at the 600-level (excluding courses numbered 682-699)		Var.
PH 4XX Any PH course at the 400-level (excluding courses numbered 482-499)		Var.
PH 5XX Any PH course at the 500-level (excluding courses numbered 582-599)		Var.
PH 6XX Any PH course at the 600-level (excluding courses numbered 682-699)		Var.
BIOM 533/CIVE 533	Biomolecular Tools for Engineers	3
ENGR 510	Engineering Optimization: Method/ Application	3
ENGR 520	Intelligent Decision Support Systems	3
ENGR 531	Engineering Risk Analysis	3
ENGR 533	Spaceflight and Biological Systems	3
ENGR 665	Stochastic Simulation in Engr Applications	3
GRAD 510	Fundamentals of High Performance Computing	3
GRAD 530	Introduction to Graduate Research	1
GRAD 544	Ethical Conduct of Research	1
GRAD 550	STEM Communication	1
MATH 550/ ENGR 550	Numerical Methods in Science and Engineering	3
MATH 569A/ DSCI 569A	Linear Algebra for Data Science: Matrices and Vectors Spaces	1
MATH 569B/ DSCI 569B	Linear Algebra for Data Science: Geometric Techniques for Data Reduction	1
MATH 569C/ DSCI 569C	Linear Algebra for Data Science: Matrix Factorizations and Transformations	1
MATH 569D/ DSCI 569D	Linear Algebra for Data Science: Theoretical Foundations	1
MECH 502	Advanced/Additive Manufacturing Engineering	3
MECH 513	Simulation Modeling and Experimentation	3
MECH 524	Principles of Dynamics	3
MECH 529	Advanced Mechanical Systems	3
MECH 531/BIOM 531	Materials Engineering	3
MECH 564	Fundamentals of Robot Mechanics and Controls	3
MECH 570/BIOM 570	Bioengineering	3
MECH 575	Solar and Alternative Energies	3
MECH 630	Biologically Inspired Robotics	3
NSCI 575/GRAD 575	Ethical Issues in Big Data Research	1
STAA 561	Probability with Applications	2
SYSE 530	Overview of Systems Engineering Processes	3
SYSE 532/ECE 532	Dynamics of Complex Engineering Systems	3
SYSE 536	Space Mission Analysis and Design	3
SYSE 541	Engineering Data Design and Visualization	3
SYSE 549	Secure Vehicle and Industrial Networking	3
SYSE 567	Systems Engineering Architecture	3
SYSE 569	Cybersecurity Awareness for Systems Engineers	3
SYSE 571	Analytics in Systems Engineering	3
SYSE 711	Ethics in Systems Engineering	1

1 Courses not accepted as regular include all courses ending in the range -82 through -99.

2 A maximum of 8 credit hours of 400-level undergraduate coursework will be counted to the degree. Remaining credits must be in 500-level or higher courses.

3 A maximum of 12 credit hours outside of the ECE department will be counted to the degree.

4 Computer Engineering students can choose from a wide range of topic areas for their courses. See the “Recommended Courses by Topic Area” document and the “Courses” link located on the following webpage: https://www.engr.colostate.edu/ece/graduates/admissions/

5 ECE MS students will complete a Portfolio by attending five research-based Seminars offered or approved by Electrical and Computer Engineering. Some examples of these Seminars include, but are not limited to:

- Talks by visiting engineers, scientists, that are part of our ECE Seminar Series
- Attending a peer's MS Thesis defense or Ph.D. defense or Ph.D. exam
- For distance students, viewing IEEE (Institute of Electrical and Electronics Engineers) research based webinars available through their professional societies on their website.

Their Portfolio Final Exam requires them to answer two questions for each of the five seminars. These questions were designed by our faculty to ask the student to connect the content of the seminars to principles they learned in their MS courses. The Portfolio is graded by an ECE faculty member and counts as the student's final exam.

6 Permission from the ECE department is required to register for ECE 695.