Computer Engineering: Networks and Data Concentration (prior to Fall 2025)

Technical Electives

Degree Total: 7-10 credits

Course Number	Course Title	Credits	Prerequisites	Terms
CS 314	Software Engineering	3	CS214 with a C or higher or CS253 with a C or higher	F,S
CS 345	Machine Learning Foundations and Practice	3	CS220 with a C or higher; CS150B with a C or higher or CS152 with a C or higher or CS165 with a C or higher; MATH159 with a C or higher or MATH160 with a C or higher; ECE303 with a C or higher or STAT303 with a C or higher	F,S
CS 370	Operating Systems	3	CS165 with a C or higher; ECE251 with a C or higher	F,S
CS 420	Introduction to Analysis of Algorithms	4	CS320 with a C or higher	F
CS 425	Introduction to Bioinformatics Algorithms	4	CS 320 with a C or higher; CS345 with a C or higher	F
CS 435	Introduction to Big Data	4	CS320 with a C or higher or CS370 with a C or higher	F
CS 440	Introduction to Artificial Intelligence	4	CS345 with a C or higher; CS320 with a C or higher	F
CS 445	Introduction to Machine Learning	4	CS165 with a C or higher; CS345 with a C or higher; MATH229 or MATH369 or DSCI369 with a C or higher	S
CS 455	Introduction to Distributed Systems	4	CS370 with a C or higher	S
CS 456	Modern CyberSecurity	4	CS356 with a C or higher	F
CS 458	Blockchain Principles and Applications	4	CS314 with a C or higher	S
CS 462 **or** CS 482A	Engaging in Virtual Worlds **or** Study Abroad-Japan: Engaging in Virtual Worlds	4	CS214 with a C or higher or CS253 with a C or higher; DSCI369 with a C or higher or MATH229 with a C or higher or MATH369 with a C or higher **Credit not allowed for CS462 and CS482A**	F **or** SU
CS 464	Principles of Human-Computer Interaction	4	CS214 with a C or higher or CS253 with a C or higher	S
CS 545[1]	Machine Learning	4	CS440	F
CS 559[1]	Quantitative Security	4	CS356 with a B or higher; ECE/STAT303 with a B or higher - will need override from CS for STAT course	F
ECE 340	Electromagnetics for Computer Engineering	3	ECE202 with a C or higher or ECE206 with a C or higher; MATH161 with a C or higher	F, Even
ECE 445	Digital Logic Synthesis	3	ECE102 with a C or higher or ECE252 with a C or higher	S
ECE 495[2]	Independent Study	1-3		F,S,SU
ECE 514	Applications of Random Processes	3	ECE303 with a C or higher or STAT303 with a C or higher; ECE312 with a C or higher	F
ECE 519	Network Centric Systems	3	CS165 with a C or higher; ECE303 with a C or higher or STAT303 with a C or higher or ECE312 with a C or higher or ECE421 with a C or higher or ECE456 with a C or higher or MATH369 with a C or higher	S, Even
ECE 520	Optimization Methods--Control and Comm	3	MATH369 or DSCI369; MATH261 with a C or higher	S
ECE/CS 528	Embedded Systems and Machine Learning	4	ECE251 with a C or higher or ECE253 with a C or higher	F
ECE 529	Signal Processing and Artificial Intelligence	3	ECE512	S
ECE 544	Silicon Photonics in Computing Systems	3	PH141; ECE303 with a C or higher or STAT303 with a C or higher	F
ECE 553	Adaptive Systems and Machine Learning	3	ECE303 with a C or higher or STAT303 with a C or higher; ECE312 with a C or higher	S
ECE 554	Computer Architecture	3	ECE452	S, Odd
ECE/CS 561	Hardware/Software Design of Embedded Systems	4	ECE251 with a C or higher or ECE253 with a C or higher or ECE452	S, Even
ECE 564	Semiconductor Memory	3	ECE202 with a C or higher or ECE206 with a C or higher	S
MATH 360	Mathematics of Information Security	3	MATH161; CS220	F
MATH 460	Information and Coding Theory	3	MATH360 or MATH366; DSCI369 or MATH369	S
MATH 463	Post-Quantum Cryptography	3	MATH360 or MATH366 or MATH466; DSCI369 or MATH369 or MATH469	S, Odd
STAT 421	Introduction to Stochastic Processes	3	DSCI369 or MATH369; STAT420 with a C or higher (substitute ECE303/STAT303 for STAT420)	S

[1] Contact the CS instructor regarding registration and overrides for CS 500 level courses.

[2] A total of 3 credits of Independent Study may apply towards degree requirements. This includes credits awarded for ECE395 and ECE495 combined.

Courses used to fulfill major and concentration requirements will not be counted as Technical Elective credits.