

Computer Engineering: Aerospace Systems Concentration
Technical Electives
Degree Total: 11-14 credits

Course Number	Course Title	Credits	Prerequisites	Terms
ATS 550	Atmospheric Radiation and Remote Sensing	3	PH142; MATH261	F
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 356	Systems Security	3	CS214 with a C or higher or CS253 with a C or higher or CS370 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 4XX	Any CS course numbered 400-479 except CS408, CS457 and CS470	4	Varies - check course description for details	F,S,SU
CS 480A7	Principles of Empirical Software Engineering	4	CS314 with a C or higher; STAT301 with a C or higher or STAT315 with a C or higher	S
CS 482A	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**	SU
CS 545 ¹	Machine Learning	4	CS440	F
CS 553 ¹	Algorithmic Language Compilers	4	CS453	F
CS 559 ¹	Quantitative Security	4	CS356 with a B or higher; ECE303 with a B or higher or STAT303 with a B or higher - will need override from CS for STAT course	F
CS 575 ¹	Parallel Processing	4	CS475	F
CS 580B ¹	Trustworthy Machine Learning	4	CS345	F
CS 580B2 ¹	Human/Social Factors in Software Engineering	4	CS314 with a C or higher; STAT301 with a C or higher or STAT315 with a C or higher	F
CS 580B3 ¹	AI for Software Engineering	4	CS314 with a B or higher; CS345 with a B or higher	S
CT 307	High Performance Programming in Rust	2	CS165	S
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 404	Experiments in Optical Electronics	2	Concurrent registration in ECE441	S
ECE 411	Control Systems	3	ECE312 with a C or higher	F
ECE 412	Digital Control and Digital Filters	3	ECE411	S
ECE 415	Semiconductor Physics and Junctions	2	MATH340 with a C or higher or MATH345 with a C or higher; PH142 with a C or higher	As Needed
ECE 421	Telecommunications	3	ECE303 with a C or higher or STAT303 with a C or higher; ECE312 with a C or higher	F
ECE 441	Optical Electronics	3	ECE340 with a C or higher or ECE342 with a C or higher	F
ECE 444	Antennas and Radiation	3	ECE340 with a C or higher or ECE342 with a C or higher	F
ECE 455	Introduction to Robot Programming/Simulation	3	CS150B with a C or higher or CS152 with a C or higher or CS162 with a C or higher or CS163 with a C or higher or CS164 with a C or higher	F
ECE 456	Computer Networks	4	CS150B with a C or higher or CS152 with a C or higher or CS162 with a C or higher or CS163 with a C or higher or CS164 with a C or higher; ECE251 with a C or higher or ECE253 with a C or higher; ECE303 with a C or higher or STAT303 with a C or higher; ECE311 with a C or higher	S
ECE 495 ²	Independent Study	1-3		F,S,SU
ECE 512	Digital Signal Processing	3	ECE312 with a C or higher	F
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 516	Information Theory	3	ECE303 with a C or higher or STAT303 with a C or higher; ECE421	F
ECE 520	Optimization Methods--Control and Comm	3	MATH369 or DSCI369; MATH261 with a C or higher	S
ECE 521	Satellite Communication	3	ECE421	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 (580C9)	Signal Processing and Artificial Intelligence	3	ECE312 with a C or higher	S
ECE 540	Computational Electromagnetics	3	ECE340 with a C or higher or ECE342 with a C or higher	As Needed
ECE 541	Applied Electromagnetics	3	ECE340 with a C or higher or ECE342 with a C or higher	F, Even
ECE 544	Silicon Photonics in Computing Systems	3	PH141; ECE303 with a C or higher or STAT303 with a C or higher or STAT315 with a C or higher	F
ECE 549	Radar Systems and Design	3	ECE340 with a C or higher or ECE342 with a C or higher	S, Odd
ECE 553 (580C8)	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

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Course Number	Course Title	Credits	Prerequisites	Terms
ECE 556	AI for Radar and Remote Sensing	3	CS150B with a C or higher or CS152 with a C or higher or CS162 with a C or higher or CS163 with a C or higher or CS164 with a C or higher; ECE303 with a C or higher or STAT303 with a C or higher; MATH369 with a C or higher	S
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 (580C6)	Semiconductor Memory	3	ECE202 with a C or higher or ECE206 with a C or higher	S
ECE 571	VLSI System Design I/Lab	4	ECE451	S
ECE 578	Satellite Data Analysis	3	ECE303 with a C or higher or STAT303 with a C or higher; ECE311 with a C or higher	F, Odd
ECE 579	Global Navigation Satellite Systems	3	ECE311 with a C or higher; MATH261 with a C or higher; PH142 with a C or higher; CS152 with a C or higher or CS162 with a C or higher or CS163 with a C or higher or CS164 with a C or higher	As Needed
ENGR 430 (480A1)	Engineering with Drones	3	PH141; MATH340	S, Even
ENGR 570	Coupled Electromechanical Systems	3	ECE202 with a C or higher or ECE206 with a C or higher; MATH340 with a C or higher	F
MATH 301	Introduction to Combinational Theory	3	MATH161	F,S,SU
MATH 331	Introduction to Mathematical Modeling	3	DSCI369 or concurrent registration or MATH369 or concurrent registration; MATH161	F
MATH 450	Intro to Numerical Analysis I	3	CS150B or CS152 or CS163 or CS164 or CS165 or CS253 or MATH151; MATH 261	F
MATH 451	Intro to Numerical Analysis II	3	CS150B or CS152 or CS163 or CS164 or CS165 or CS253 or MATH151; MATH340 or MATH345	S
MECH 518 ³	Orbital Mechanics	3	MATH340; PH142	F
MECH 519 ³	Aerospace Vehicles Trajectory and Performance	3	MATH340; PH142	S
MECH 580B6 ³	Aerospace Guidance, Navigation, and Control	3	MATH340; PH142	S
STAT 421	Introduction to Stochastic Processes	3	DSCI369 or MATH369; STAT420 with a C or higher (substitute ECE303/STAT303 for STAT420)	S
SYSE 580A6	AI-Augmented Systems Engineering	3	SYSE501 or concurrent registration	S, Even

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

² A total of 6 credits of Independent Study may apply towards degree requirements. This includes credits awarded for ECE395 and ECE495 combined.

³ Override required for registration - Must have a minimum 3.0 gpa or higher or consent of instructor.

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