

Computer Engineering – Avionics and Embedded Systems (Old course sequences)

Computer Engineering program old course sequences for year 2, year 3 and year 4 students

- 1. Students in the 2nd year, 3rd year and 4th year of 120-credit Computer Engineering program should follow the old sequences presented in the next pages.
- 2. The 1st year courses indicated in the following course sequences were offered in academic year 2018-19 and will not be offered anymore.
- 3. The 2nd year courses indicated in the following course sequences will be offered only in academic year 2019-20 for the last time.
- 4. The 3rd year courses indicated in the following course sequences will be offered only in academic years 2019-20 and 2020-21.
- 5. The 4th year courses indicated in the following course sequences will be offered only in academic years 2019-20, 2020-2021 and 2021-22.





Computer Engineering - Avionics and Embedded Systems September Entry (Admitted in Fall 2018 or earlier)

	Term	Course	Title	Credit	Prerequisite	Co-requisite
Year 1	Fall	COEN 212	Digital Systems Design I	3.50	MATH 204	
		COEN 243	Programming Methodology I	3.00	MATH 204	
		ELEC 273	Basic Circuit Analysis	3.50	PHYS 205	ENGR 213
		ENGR 201	Professional Practice and Responsibility	1.50		
		ENGR 213	Applied Ordinary Differential Equations	3.00	MATH 205	MATH 204
	Winter	COEN 231	Introduction to Discrete Mathematics	3.00	MATH 204	
		COEN 244	Programming Methodology II	3.00	COEN 243	
		COEN 311	Computer Organization and Software	3.50	COEN 212, 243	
		FLEC 242	Continuous-Time Signals and Systems	3.00	ELEC 273; ENGR 213	
		ENGR 202	Sustainable Development and Environmental Stewardship	1.50		
Year 2	Fall	COEN 352	Data Structures and Algorithms	3.00	COEN 231, 244	
		ELEC 311	Electronics I	3.50	ELEC 273	
		ELEC 342	Discrete-Time Signals and Systems	3.50	ELEC 242 or 264	
					Students must pass the Engineering Writing Test (EWT), or	
		ENCS 282	Technical Writing and Communication	3.00	pass ENCS 272 with a grade of C- or higher	
		ENGR 233	Applied Advanced Calculus	3.00	MATH 204, 205	
	Winter	COEN 313	Digital Systems Design II	3.50	COEN 212, 231	
		COEN 346	Operating Systems	3.50	COEN 311; COMP 352 or COEN 352	
		ELEC 353	Transmission Lines, Waves and Signal Integrity	3.00	ELEC 242 or 264; ENGR 233	
		ENGR 290	Introductory Engineering Team Design Project	3.00	ENCS 282; ENGR 213, 233	
		SOEN 341	Software Process	3.00	COMP 352 or COEN 352	ENCS 282
		002.7072		0.00	SSIVII 602 61 60211 602	2.100 202
Year 3	Fall	COEN 316	Computer Architecture and Design	3.50	COEN 311, 313	
		COEN 317	Microprocessor Systems	3.50	COEN 311 or COMP 228 or SOEN 228; COEN 313	
		COEN 320	Introduction to Real-Time Systems	3.00	COEN 346 or COMP 346	
		ENGR 301	Engineering Management Principles and Economics	3.00	332.13.133.333.333.33	
		LIVON 301	Engineering Management Finisiples and Economics	3.00	ENGR 213, 233; COMP 248 or COEN 243 or MECH 215 or	
		ENGR 391	Numerical Methods in Engineering	3.00	BCEE 231	
					Minimum of 45 credits in BEng (Computer); COEN 244,	
	Winter	COEN 390	Computer Engineering Product Design Project	2.00		
		COLIVISO	Computer Engineering Product Design Project	3.00	311; ENGR 290, 301	
		ELEC 321	Introduction to Semiconductor Materials and Devices	3.50	· · · · · · · · · · · · · · · · · · ·	
			Introduction to Semiconductor Materials and Devices	3.50	311; ENGR 290, 301 CHEM 205; ENGR 213 ELEC 242 or 364	
		ELEC 321	Introduction to Semiconductor Materials and Devices Fundamentals of Control Systems		CHEM 205; ENGR 213 ELEC 242 or 364	
		ELEC 321 ELEC 372	Introduction to Semiconductor Materials and Devices	3.50 3.50	CHEM 205; ENGR 213	
Year 4	Fall	ELEC 321 ELEC 372 ENGR 371	Introduction to Semiconductor Materials and Devices Fundamentals of Control Systems Probability and Statistics in Engineering	3.50 3.50 3.00	CHEM 205; ENGR 213 ELEC 242 or 364 ENGR 213, 233	
Year 4	Fall	ELEC 321 ELEC 372	Introduction to Semiconductor Materials and Devices Fundamentals of Control Systems	3.50 3.50	CHEM 205; ENGR 213 ELEC 242 or 364 ENGR 213, 233 AERO 371 or ELEC 372 or MECH 371 or SOEN 385 ENGR 371 or COMP 233; AERO 371 or ELEC 372 or MECH	
Year 4	Fall	ELEC 321 ELEC 372 ENGR 371 AERO 480	Introduction to Semiconductor Materials and Devices Fundamentals of Control Systems Probability and Statistics in Engineering Flight Control Systems	3.50 3.50 3.00 3.50	CHEM 205; ENGR 213 ELEC 242 or 364 ENGR 213, 233 AERO 371 or ELEC 372 or MECH 371 or SOEN 385 ENGR 371 or COMP 233; AERO 371 or ELEC 372 or MECH 370 or SOEN 385	
Year 4	Fall	ELEC 321 ELEC 372 ENGR 371 AERO 480	Introduction to Semiconductor Materials and Devices Fundamentals of Control Systems Probability and Statistics in Engineering Flight Control Systems	3.50 3.50 3.00 3.50	CHEM 205; ENGR 213 ELEC 242 or 364 ENGR 213, 233 AERO 371 or ELEC 372 or MECH 371 or SOEN 385 ENGR 371 or COMP 233; AERO 371 or ELEC 372 or MECH 370 or SOEN 385 Minimum of 75 credits in BEng (Computer) or permission of the Department; ENGR 371; COEN 352, 390; ELEC 311	
Year 4	Fall	ELEC 321 ELEC 372 ENGR 371 AERO 480 AERO 482 COEN 490	Introduction to Semiconductor Materials and Devices Fundamentals of Control Systems Probability and Statistics in Engineering Flight Control Systems Avionic Navigation Systems Capstone Computer Engineering Design Project	3.50 3.50 3.00 3.50 3.00 4.00	CHEM 205; ENGR 213 ELEC 242 or 364 ENGR 213, 233 AERO 371 or ELEC 372 or MECH 371 or SOEN 385 ENGR 371 or COMP 233; AERO 371 or ELEC 372 or MECH 370 or SOEN 385 Minimum of 75 credits in BEng (Computer) or permission of the Department; ENGR 371; COEN 352, 390; ELEC 311 or SOEN 341	
Year 4	Fall	ELEC 321 ELEC 372 ENGR 371 AERO 480 AERO 482	Introduction to Semiconductor Materials and Devices Fundamentals of Control Systems Probability and Statistics in Engineering Flight Control Systems Avionic Navigation Systems	3.50 3.50 3.00 3.50 3.50	CHEM 205; ENGR 213 ELEC 242 or 364 ENGR 213, 233 AERO 371 or ELEC 372 or MECH 371 or SOEN 385 ENGR 371 or COMP 233; AERO 371 or ELEC 372 or MECH 370 or SOEN 385 Minimum of 75 credits in BEng (Computer) or permission of the Department; ENGR 371; COEN 352, 390; ELEC 311	
Year 4		ELEC 321 ELEC 372 ENGR 371 AERO 480 AERO 482 COEN 490 ENGR 392	Introduction to Semiconductor Materials and Devices Fundamentals of Control Systems Probability and Statistics in Engineering Flight Control Systems Avionic Navigation Systems Capstone Computer Engineering Design Project Impact of Technology on Society	3.50 3.50 3.00 3.50 3.00 4.00	CHEM 205; ENGR 213 ELEC 242 or 364 ENGR 213, 233 AERO 371 or ELEC 372 or MECH 371 or SOEN 385 ENGR 371 or COMP 233; AERO 371 or ELEC 372 or MECH 370 or SOEN 385 Minimum of 75 credits in BEng (Computer) or permission of the Department; ENGR 371; COEN 352, 390; ELEC 311 or SOEN 341 ENCS 282; ENGR 201, 202	
Year 4	Fall	ELEC 321 ELEC 372 ENGR 371 AERO 480 AERO 482 COEN 490 ENGR 392 AERO 483	Introduction to Semiconductor Materials and Devices Fundamentals of Control Systems Probability and Statistics in Engineering Flight Control Systems Avionic Navigation Systems Capstone Computer Engineering Design Project Impact of Technology on Society Integration of Avionics Systems	3.50 3.50 3.00 3.50 3.00 4.00 3.00	CHEM 205; ENGR 213 ELEC 242 or 364 ENGR 213, 233 AERO 371 or ELEC 372 or MECH 371 or SOEN 385 ENGR 371 or COMP 233; AERO 371 or ELEC 372 or MECH 370 or SOEN 385 Minimum of 75 credits in BEng (Computer) or permission of the Department; ENGR 371; COEN 352, 390; ELEC 311 or SOEN 341 ENCS 282; ENGR 201, 202	
Year 4		ELEC 321 ELEC 372 ENGR 371 AERO 480 AERO 482 COEN 490 ENGR 392	Introduction to Semiconductor Materials and Devices Fundamentals of Control Systems Probability and Statistics in Engineering Flight Control Systems Avionic Navigation Systems Capstone Computer Engineering Design Project Impact of Technology on Society	3.50 3.50 3.00 3.50 3.00 4.00	CHEM 205; ENGR 213 ELEC 242 or 364 ENGR 213, 233 AERO 371 or ELEC 372 or MECH 371 or SOEN 385 ENGR 371 or COMP 233; AERO 371 or ELEC 372 or MECH 370 or SOEN 385 Minimum of 75 credits in BEng (Computer) or permission of the Department; ENGR 371; COEN 352, 390; ELEC 311 or SOEN 341 ENCS 282; ENGR 201, 202 AERO 482 COEN 317, 320; SOEN 341	
Year 4		ELEC 321 ELEC 372 ENGR 371 AERO 480 AERO 482 COEN 490 ENGR 392 AERO 483	Introduction to Semiconductor Materials and Devices Fundamentals of Control Systems Probability and Statistics in Engineering Flight Control Systems Avionic Navigation Systems Capstone Computer Engineering Design Project Impact of Technology on Society Integration of Avionics Systems	3.50 3.50 3.00 3.50 3.00 4.00 3.00	CHEM 205; ENGR 213 ELEC 242 or 364 ENGR 213, 233 AERO 371 or ELEC 372 or MECH 371 or SOEN 385 ENGR 371 or COMP 233; AERO 371 or ELEC 372 or MECH 370 or SOEN 385 Minimum of 75 credits in BEng (Computer) or permission of the Department; ENGR 371; COEN 352, 390; ELEC 311 or SOEN 341 ENCS 282; ENGR 201, 202	
Year 4		ELEC 321 ELEC 372 ENGR 371 AERO 480 AERO 482 COEN 490 ENGR 392 AERO 483 COEN 421	Introduction to Semiconductor Materials and Devices Fundamentals of Control Systems Probability and Statistics in Engineering Flight Control Systems Avionic Navigation Systems Capstone Computer Engineering Design Project Impact of Technology on Society Integration of Avionics Systems Embedded Systems Design	3.50 3.50 3.00 3.50 3.00 4.00 3.00	CHEM 205; ENGR 213 ELEC 242 or 364 ENGR 213, 233 AERO 371 or ELEC 372 or MECH 371 or SOEN 385 ENGR 371 or COMP 233; AERO 371 or ELEC 372 or MECH 370 or SOEN 385 Minimum of 75 credits in BEng (Computer) or permission of the Department; ENGR 371; COEN 352, 390; ELEC 311 or SOEN 341 ENCS 282; ENGR 201, 202 AERO 482 COEN 317, 320; SOEN 341 Minimum of 75 credits in BEng (Computer) or permission of the Department; ENGR 371; COEN 352, 390; ELEC 311	

^{*} A minimum of 7 credits must be chosen from the Computer Engineering Electives list. For more information, please consult section 71.30.2 of the 2017-2018 Undergraduate Calendar.





Computer Engineering - Avionics and Embedded Systems January Entry (Admitted in Winter 2019 or earlier)

Year	Term	Course	Title	Credit	Prerequisite	Co-requisite
Year 1	Winter	COEN 212	Digital Systems Design I	3.50	MATH 204	
		COEN 231	Introduction to Discrete Mathematics	3.00	MATH 204	
		COEN 243	Programming Methodology I	3.00	MATH 204	
		ELEC 273	Basic Circuit Analysis	3.50	PHYS 205	ENGR 213
		ENGR 213	Applied Ordinary Differential Equations	3.00	MATH 205	MATH 204
	Summer	COEN 244	Programming Methodology II	3.00	COEN 243	
		ELEC 242	Continuous-Time Signals and Systems	3.00	ELEC 273; ENGR 213	
		ENCS 282	Technical Writing and Communication	3.00	Students must pass the Engineering Writing Test (EWT), or pass ENCS 272 with a grade of C- or higher	
		ENGR 201	Professional Practice and Responsibility	1.50		
		ENGR 233	Applied Advanced Calculus	3.00	MATH 204, 205	
Year 2	Fall	COEN 311	Computer Organization and Software	3.50	COEN 212, 243	
		COEN 352	Data Structures and Algorithms	3.00	COEN 231, 244	
		ELEC 311	Electronics I	3.50	ELEC 273	
		ELEC 342	Discrete-Time Signals and Systems	3.50	ELEC 242 or 264	
		ENGR 202	Sustainable Development and Environmental Stewardship	1.50		
		Z.YGY ZOZ	Sustainable Bevelopment and Environmental stemarasinp	1.50		
	Winter	COEN 313	Digital Systems Design II	3.50	COEN 212, 231	
	11111001	COEN 346	Operating Systems	3.50	COEN 311; COMP 352 or COEN 352	
		ELEC 353	Transmission Lines, Waves and Signal Integrity	3.00	ELEC 242 or 264; ENGR 233	
		ENGR 290	Introductory Engineering Team Design Project	3.00	ENCS 282; ENGR 213, 233	
		SOEN 341	Software Process	3.00	COMP 352 or COEN 352	ENCS 282
		30LN 341	Software Frocess	3.00	COIVIF 332 OF COLIN 332	LINCS 282
Year 3	Fall	COEN 316	Computer Architecture and Design	3.50	COEN 311, 313	
Teal 5	Ган		· · · · · · · · · · · · · · · · · · ·	3.50		
		COEN 317	Microprocessor Systems		COEN 311 or COMP 228 or SOEN 228; COEN 313 COEN 346 or COMP 346	
		COEN 320	Introduction to Real-Time Systems	3.00	COEN 346 OF COMP 346	
		ENGR 301	Engineering Management Principles and Economics	3.00	FUOD 242 222 COMP 242 COFFI 242 MESU 245	
		ENGR 391	Numerical Methods in Engineering	3.00	ENGR 213, 233; COMP 248 or COEN 243 or MECH 215 or BCEE 231	
	Winter	COEN 390	Computer Engineering Product Design Project	3.00	Minimum of 45 credits in BEng (Computer); COEN 244, 311; ENGR 290, 301	
		ELEC 321	Introduction to Semiconductor Materials and Devices	3.50	CHEM 205; ENGR 213	
		ELEC 372	Fundamentals of Control Systems	3.50	ELEC 242 or 364	
		ENGR 371	Probability and Statistics in Engineering	3.00	ENGR 213, 233	
Year 4	Fall	AERO 480	Flight Control Systems	3.50	AERO 371 or ELEC 372 or MECH 371 or SOEN 385	
		AERO 482	Avionic Navigation Systems	3.00	ENGR 371 or COMP 233; AERO 371 or ELEC 372 or MECH 370 or SOEN 385	
		COEN 490	Capstone Computer Engineering Design Project	4.00	Minimum of 75 credits in BEng (Computer) or permission of the Department; ENGR 371; COEN 352, 390; ELEC 311 or SOEN 341	
		ENGR 392	Impact of Technology on Society	3.00	ENCS 282; ENGR 201, 202	
	Winter	AERO 483	Integration of Avionics Systems	3.00	AERO 482	
		COEN 421	Embedded Systems Design	4.00	COEN 317, 320; SOEN 341	
		COEN 490	Capstone Computer Engineering Design Project		Minimum of 75 credits in BEng (Computer) or permission of the Department; ENGR 371; COEN 352, 390; ELEC 311 or SOEN 341	
			General Education elective	3.00		
			Elective*			
					·	

^{*} A minimum of 7 credits must be chosen from the Computer Engineering Electives list. For more information, please consult section 71.30.2 of the 2017-2018 Undergraduate Calendar.





Computer Engineering - Avionics and Embedded Systems Co-op Entry (Admitted in Fall 2018 or earlier)

Year	Term	Course	Title	Credit	Prerequisite	Co-requisite
Year 1	Fall	COEN 212	Digital Systems Design I	3.50	MATH 204	
		COEN 243	Programming Methodology I	3.00	MATH 204	
		ELEC 273	Basic Circuit Analysis	3.50	PHYS 205	ENGR 213
		ENGR 201	Professional Practice and Responsibility	1.50		
		ENGR 213	Applied Ordinary Differential Equations	3.00	MATH 205	MATH 204
	\\/:\atau	COEN 231	Introduction to Disprets With spectics	2.00	MATH 204	
	Winter		Introduction to Discrete Mathematics	3.00	MATH 204	
		COEN 244	Programming Methodology II	3.00	COEN 243	
		COEN 311	Computer Organization and Software	3.50	COEN 212, 243	
		ELEC 242	Continuous-Time Signals and Systems	3.00	ELEC 273; ENGR 213	
		ELEC 311	Electronics I	3.50	ELEC 273	
	Cummor	COEN 352	Data Structures and Algorithms	2.00	COEN 221 244	
	Summer	ELEC 342		3.00	COEN 231, 244 ELEC 242 or 264	
		ELEC 342	Discrete-Time Signals and Systems	3.50		
		ENCS 282	Technical Writing and Communication	3.00	Students must pass the Engineering Writing Test (EWT), or pass ENCS 272 with a grade of C- or higher	
		ENGR 202	Sustainable Development and Environmental Stewardship	1.50		
		ENGR 233	Applied Advanced Calculus	3.00	MATH 204, 205	
ear 2	Fall	Work Term 1				
	Winter	COEN 313	Digital Systems Design II	3.50	COEN 212, 231	
		COEN 346	Operating Systems	3.50	COEN 311; COMP 352 or COEN 352	
		ELEC 353	Transmission Lines, Waves and Signal Integrity	3.00	ELEC 242 or 264; ENGR 233	
		ENGR 290	Introductory Engineering Team Design Project	3.00	ENCS 282; ENGR 213, 233	
		SOEN 341	Software Process	3.00	COMP 352 or COEN 352	ENCS 282
	Cummor	ENCD 201	Engineering Management Principles and Economics	2.00		
	Summer	ENGR 301	Engineering Management Principles and Economics	3.00	FNCD 242 222	
		ENGR 371	Probability and Statistics in Engineering	3.00	ENGR 213, 233	
		ENGR 391	Numerical Methods in Engineering	3.00	ENGR 213, 233; COMP 248 or COEN 243 or MECH 215 or BCEE 231	
		ENGR 392	Impact of Technology on Society	3.00	ENCS 282; ENGR 201, 202	
ear 3	Fall	COEN 316	Computer Architecture and Design	3.50	COEN 311, 313	
		COEN 317	Microprocessor Systems	3.50	COEN 311 or COMP 228 or SOEN 228; COEN 313	
		COEN 320	Introduction to Real-Time Systems	3.00	COEN 346 or COMP 346	
		COEN 390	Computer Engineering Product Design Project	3.00	Minimum of 45 credits in BEng (Computer); COEN 244, 311; ENGR 290, 301	
		ELEC 372	Fundamentals of Control Systems	3.50	ELEC 242 or 364	
		2220072	r and amentals on control of steems	3.30		
	Winter	Work Term 2				
	Summer	Work Term 3				
	Summer	VVOIK IEIIII3				
Year 4	Fall	AERO 480	Flight Control Systems	3.50	AERO 371 or ELEC 372 or MECH 371 or SOEN 385	
		AERO 482	Avionic Navigation Systems	3.00	ENGR 371 or COMP 233; AERO 371 or ELEC 372 or MECH 370 or SOEN 385	
			,		Minimum of 75 credits in BEng (Computer) or permission of the	
		COEN 490	Capstone Computer Engineering Design Project	4.00	Department; ENGR 371; COEN 352, 390; ELEC 311	
			Conoral Education alastics	2.00	or SOEN 341	
			General Education elective	3.00		
			Elective*			
	Winter	AERO 483	Integration of Avionics Systems	3.00	AERO 482	
		COEN 421	Embedded Systems Design	4.00	COEN 317, 320; SOEN 341	
		COEN 490	Capstone Computer Engineering Design Project		Minimum of 75 credits in BEng (Computer) or permission of the Department; ENGR 371; COEN 352, 390; ELEC 311 or SOEN 341	
		ELEC 321	Introduction to Semiconductor Materials and Devices	3.50	CHEM 205; ENGR 213	
		LLLC JZI	incroduction to Jenniconductor Materials and Devices	3.30	CHEM 200, LINGIN 213	

^{*} A minimum of 7 credits must be chosen from the Computer Engineering Electives list. For more information, please consult section 71.30.2 of the 2017-2018 Undergraduate Calendar.

