Software Engineering - Real-Time, Embedded, and Avionics Software
September Entry

Year	Term	Course	Title	Credit	Prerequisite	Co-requisite
Year 1	Fall	COMP 232	Mathematics for Computer Science	3.00	MATH 203, 204	
		COMP 248	Object-Oriented Programming I	3.50		MATH 204
		ENGR 201	Professional Practice and Responsibility	1.50		
		ENGR 213	Applied Ordinary Differential Equations	3.00	MATH 205	MATH 204
			General Education elective	3.00		
	Winter	COMP 249	Object-Oriented Programming II	3.50	COMP 248; MATH 203	MATH 205
		ENGR 233	Applied Advanced Calculus	3.00	MATH 204, 205	
		SOEN 228	System Hardware	4.00	MATH 203, 204	
		SOEN 287	Web Programming	3.00	COMP 248	
			Basic Science	3.00		
Year 2	Fall	COMP 348	Principles of Programming Languages	3.00	COMP 249	
		COMP 352	Data Structures and Algorithms	3.00	COMP 249	COMP 232
		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		
			Basic Science	3.00		
	Winter	COMP 346	Operating Systems	4.00	COMP 228 or SOEN 228; COMP 352	
		ELEC 275	Principles of Electrical Engineering	3.50	PHYS 205	ENGR 213
		ENGR 371	Probability and Statistics in Engineering	3.00	ENGR 213, 233	
		SOEN 331	Introduction to Formal Methods for Software Engineering	3.00	COMP 232, 249	
		SOEN 341	Software Process	3.00	COMP 352 or COEN 352	ENCS 282
Year 3	Fall	COMP 335	Introduction to Theoretical Computer Science	3.00	COMP 232 or COEN 231; COMP 249 or COEN 244	
		SOEN 342	Software Requirements and Specifications	3.00	SOEN 341	
		SOEN 343	Software Architecture and Design I	3.00	SOEN 341	SOEN 342
		SOEN 384	Management, Measurement and Quality Control	3.00	ENCS 282; SOEN 341	
		SOEN 422	Embedded Systems and Software	4.00	COMP 346	
	Winter	SOEN 363	Data Systems for Software Engineers	3.00	COMP 352	
		SOEN 345	Software Testing, Verification and Quality Assurance	3.00		SOEN 343
		SOEN 357	User Interface Design	3.00	SOEN 342	
		SOEN 385	Control Systems and Applications	3.00	ENGR 213, 233	
		SOEN 390	Software Engineering Team Design Project	3.50		SOEN 345, 357

Year 4	Fall	SOEN 321	Information Systems Security	3.00	COMP 346	
		SOEN 423	Distributed Systems	4.00	COMP 346	
		SOEN 490	Capstone Software Engineering Design Project	4.00	SOEN 390	
			Elective*			
	Winter	ENGR 301	Engineering Management Principles and Economics	3.00		
		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	
		SOEN 490	Capstone Software Engineering Design Project		SOEN 390	
			Elective*			

**** Students must complete at least 16 credits with a minimum of 15 credits from one of the options listed under section 71.70.9 of the 2018-2019 Undergraduate Calendar, including all the courses marked *, and at least one course marked **, and the remainder chosen from the electives list.***

Please note, only core courses are listed and not all electives are assigned a row in the above sequence.

Full-time status: minimum 12 credits required per term.

Software Engineering - Real-Time, Embedded, and Avionics Software
January Entry

Year	Term	Course	Title	Credit	Prerequisite	Co-requisite
Year 1	Winter	COMP 232	Mathematics for Computer Science	3.00	MATH 203, 204	
		COMP 248	Object-Oriented Programming I	3.50		MATH 204
		ENGR 201	Professional Practice and Responsibility	1.50		
		ENGR 213	Applied Ordinary Differential Equations	3.00	MATH 205	MATH 204
		SOEN 228	System Hardware	4.00	MATH 203, 204	
	Summer	COMP 249	Object-Oriented Programming II	3.50	COMP 248; MATH 203	MATH 205
		ENGR 202	Sustainable Development and Environmental Stewardship	1.50		
		ENGR 233	Applied Advanced Calculus	3.00	MATH 204, 205	
		SOEN 287	Web Programming	3.00	COMP 248	
			General Education elective	3.00		
Year 2	Fall	COMP 348	Principles of Programming Languages	3.00	COMP 249	
		COMP 352	Data Structures and Algorithms	3.00	COMP 249	COMP 232

		ELEC 275	Principles of Electrical Engineering	3.50	PHYS 205	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	
			Basic Science	3.00		
	Winter	COMP 346	Operating Systems	4.00	COMP 228 or SOEN 228; COMP 352	
		ENGR 371	Probability and Statistics in Engineering	3.00	ENGR 213, 233	
		SOEN 331	Introduction to Formal Methods for Software Engineering	3.00	COMP 232, 249	
		SOEN 341	Software Process	3.00	COMP 352 or COEN 352	ENCS 282
			Basic Science	3.00		
Year 3	Fall	COMP 335	Introduction to Theoretical Computer Science	3.00	COMP 232 or COEN 231; COMP 249 or COEN 244	
		SOEN 342	Software Requirements and Specifications	3.00	SOEN 341	
		SOEN 343	Software Architecture and Design I	3.00	SOEN 341	SOEN 342
		SOEN 384	Management, Measurement and Quality Control	3.00	ENCS 282; SOEN 341	
		SOEN 422	Embedded Systems and Software	4.00	COMP 346	
	Winter	SOEN 363	Data Systems for Software Engineers	3.00	COMP 352	
		SOEN 345	Software Testing, Verification and Quality Assurance	3.00		SOEN 343
		SOEN 357	User Interface Design	3.00	SOEN 342	
		SOEN 385	Control Systems and Applications	3.00	ENGR 213, 233	
		SOEN 390	Software Engineering Team Design Project	3.50		SOEN 345, 357
Year 4	Fall	SOEN 321	Information Systems Security	3.00	COMP 346	
		SOEN 423	Distributed Systems	4.00	COMP 346	
		SOEN 490	Capstone Software Engineering Design Project	4.00	SOEN 390	
			Elective*			
	Winter	ENGR 301	Engineering Management Principles and Economics	3.00		
		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	
		SOEN 490	Capstone Software Engineering Design Project		SOEN 390	
			Elective*			

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Full-time status: minimum 12 credits required per term.

Software Engineering - Real-Time, Embedded, and Avionics Software

Co-op Entry

Year	Term	Course	Title	Credit	Prerequisite	Co-requisite
Year 1	Fall	COMP 232	Mathematics for Computer Science	3.00	MATH 203, 204	
		COMP 248	Object-Oriented Programming I	3.50		MATH 204
		ENGR 201	Professional Practice and Responsibility	1.50		
		ENGR 213	Applied Ordinary Differential Equations	3.00	MATH 205	MATH 204
			Basic Science	3.00		
	Winter	COMP 249	Object-Oriented Programming II	3.50	COMP 248; MATH 203	MATH 205
		ENGR 233	Applied Advanced Calculus	3.00	MATH 204, 205	
		SOEN 228	System Hardware	4.00	MATH 203, 204	
		SOEN 287	Web Programming	3.00	COMP 248	
			Basic Science	3.00		
	Summer	COMP 348	Principles of Programming Languages	3.00	COMP 249	
		COMP 352	Data Structures and Algorithms	3.00	COMP 249	COMP 232
		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		
			General Education elective	3.00		
Year 2	Fall	Work Term 1				
	Winter	COMP 346	Operating Systems	4.00	COMP 228 or SOEN 228; COMP 352	
		ELEC 275	Principles of Electrical Engineering	3.50	PHYS 205	ENGR 213
		ENGR 371	Probability and Statistics in Engineering	3.00	ENGR 213, 233	
		SOEN 331	Introduction to Formal Methods for Software Engineering	3.00	COMP 232, 249	
		SOEN 341	Software Process	3.00	COMP 352 or COEN 352	ENCS 282
	Summer	Work Term 2				
Year 3	Fall	COMP 335	Introduction to Theoretical Computer Science	3.00	COMP 232 or COEN 231; COMP 249 or COEN 244	
		SOEN 342	Software Requirements and Specifications	3.00	SOEN 341	
		SOEN 343	Software Architecture and Design I	3.00	SOEN 341	SOEN 342
		SOEN 384	Management, Measurement and Quality Control	3.00	ENCS 282; SOEN 341	
		SOEN 422	Embedded Systems and Software	4.00	COMP 346	
	Winter	SOEN 363	Data Systems for Software Engineers	3.00	COMP 352	

		SOEN 345	Software Testing, Verification and Quality Assurance	3.00		SOEN 343
		SOEN 357	User Interface Design	3.00	SOEN 342	
		SOEN 385	Control Systems and Applications	3.00	ENGR 213, 233	
		SOEN 390	Software Engineering Team Design Project	3.50		SOEN 345, 357
	Summer	Work Term 3				
Year 4	Fall	SOEN 321	Information Systems Security	3.00	COMP 346	
		SOEN 423	Distributed Systems	4.00	COMP 346	
		SOEN 490	Capstone Software Engineering Design Project	4.00	SOEN 390	
			Elective*			
	Winter	ENGR 301	Engineering Management Principles and Economics	3.00		
		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	
		SOEN 490	Capstone Software Engineering Design Project		SOEN 390	
			Elective*			

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