

Recommended Course Sequence
Aerospace Engineering Option B – Structures and Materials (Co-op)
2022-2023 Academic Year

	SUMMER /1		FALL /2		WINTER /4		
YEAR 1			AERO 201 Intro to Flight & Aero Systems Prerequisite: ENGR 213 previously or concurrently	4.00	ENCS 282 Tech. Writing & Comm. Prerequisite: The Engineering Writing Test (EWT) or ENCS 272 must be completed prior to registering.	3.00	
			ENGR 201 Professional Practice & Resp. Prerequisite: none	1.50	ENGR 233 Applied Advanced Calculus Prerequisite: MATH 204; MATH 205	3.00	
			ENGR 213 Applied Ord. Differential Eq. Prerequisite: MATH 204 previously or concurrently; MATH 205	3.00	ENGR 243 Dynamics Prerequisite: ENGR 213, 242	3.00	
			ENGR 242 Statics Prerequisite: ENGR 213 previously or concurrently; PHYS 204; MATH 204.	3.00	ENGR 244 Mechanics of Materials Prerequisite: ENGR 213; ENGR 242 or 245; ENGR 233 previously or concurrently	3.75	
			MIAE 215 Prog. for Mech & Indu Eng. Prerequisite: MATH 204	3.50	ENGR 251 Thermodynamics I Prerequisite: MATH 203	3.00	
YEAR 2	ENGR 202 Sust. Dev. Enviro. Stewardship Prerequisite: none	1.50	WORK TERM 1 (You must complete ENCS 282 before your first work-term)			AERO 290 Introduction to Aircraft Design Prereq: AERO 201; ENCS 282 previously or concurrently.	3.00
	ENGR 311 Trans. Cal. & Partial Diff. Eq. Prerequisite: ENGR 213, 233	3.00				AERO 371 Modelling and Control Systems Prerequisite: PHYS 205; ENGR 213, 243; ENGR 311 or ELEC 342 or ELEC 364 previously or concurrently.	3.50
	ENGR 361 Fluid Mechanics I Prerequisite: ENGR 213, 233, 251	3.00				MIAE 221 Materials Science Prerequisite: CHEM 205	3.00
	ENGR 371 Probability & Stats in Eng. Prerequisite: ENGR 213, 233	3.00				MIAE 313 Machine Drawing and Design Prerequisite: MECH 211 or MIAE 211	3.50
	MIAE 211 Mech. Engineering Drawing Prerequisite: none	3.50				MECH 343 Theory of Machines Prerequisite: ENGR 213, 233, 243	3.50
YEAR 3	AERO 417 Standards, Reg. and Certification Prerequisite: ENGR 201.	3.00	AERO 390 Aero Engineering Design Project Prerequisite: AERO 290, 371; ENCS 282.	3.00	WORK TERM 2		
	ENGR 301 Engr. Manage. Principles Econ Prerequisite: none	3.00	AERO 481 Materials Engr. for Aerospace Prerequisite: MECH 221 or MIAE 221.	3.50			
	ENGR 391 Numerical Methods in Eng. Prerequisite: ENGR 213, 233; COMP 248 or COEN 243 or MECH 215 or MIAE 215 or BCEE 231	3.00	MIAE 311 Manufacturing Processes Prerequisite: MECH 313 or MIAE 313	3.00			
	ENGR 392 Impact of Technology on Society Prerequisite: ENCS 282; ENGR 201, 202	3.00	MIAE 312 EDML Lab Prerequisite: MIAE 311 previously or concurrently.	1.00			
	MECH 375 Mechanical Vibrations Prerequisite: AERO 371 or MECH 370	3.50	MECH 352 Heat Transfer I Prerequisite: ENGR 311, 361	3.50			
			MECH 411 Instrumentation & Measurements Prerequisite: ENGR 311; AERO 371 or MECH 370.	3.50			
YEAR 4	WORK TERM 3		AERO 431 Principles of Aeroelasticity Prerequisite: ENGR 243, 361; MECH 375.	3.00	AERO 487 Design of Aircraft Structures Prerequisite: AERO 486.	3.00	
			AERO 486 Aircraft Stress Analysis Prerequisite: ENGR 243, 244.	3.00	MECH 460 Finite Element Analysis Prerequisite: ENGR 244, 391.	3.75	
			MECH 412 Computer-Aided Mechanical Design Prerequisite: MECH 313 or MIAE 313.	3.50	General Studies (Undergrad Calendar, Sec. 71.110)	3.00	
			Technical Electives (UGRAD Calendar, Sec. 71.55)		---		
			AERO 490 Capstone Aerospace Engineering Design Project Prerequisite: 75 credits in the program; AERO 390; ENGR 301.		4.00		

DETAILED COURSE INFORMATION
Aerospace - Option B 2022-23

COURSE	TITLE	CREDIT	PRE-REQUISITE	CO-REQUISITE	SUM 1	SUM 2	FALL	WIN
AERO 201	Introduction to Flight and Aerospace Systems	4.00		ENGR 213			X	
AERO 290	Introduction to Aircraft Design	3.00	AERO 201	ENCS 282				X
AERO 371	Modelling and Control Systems	3.50	PHYS 205; ENGR 213, 243	ENGR 311 or ELEC 342 or ELEC 364				X
AERO 390	Aerospace Engineering Design Project	3.00	AERO 290, 371; ENCS 282				X	
AERO 417	Standards, Regulations and Certification	3.00	ENGR 201		X		X	
AERO 431	Principles of Aeroelasticity	3.00	ENGR 243, 361; MECH 375				X	
AERO 455	Computational Fluid Dynamics for Aerospace Applications	3.75	ENGR 311, 391; MECH 361					X
AERO 471	Aircraft Hydro-Mechanical and Fuel Systems	3.50	AERO 201 or permission of the Department					X
AERO 472	Aircraft Pneumatic and Electrical Power Systems	3.50	AERO 201; ENGR 361					
AERO 480	Flight Control Systems	3.50	AERO 371 or ELEC 372 or MECH 371 or SOEN 385				X	
AERO 481	Materials Engineering for Aerospace	3.50	MECH 221 or MIAE 221				X	
AERO 482	Avionic Navigation Systems	3.00	ENGR 371 or COMP 233; AERO 371 or ELEC 372 or MECH 370 or SOEN 385				X	
AERO 486	Aircraft Stress Analysis	3.00	ENGR 243, 244				X	
AERO 487	Design of Aircraft Structures	3.00	AERO 486					X
AERO 490	Capstone Aerospace Engineering Design Project	4.00	75 credits in the program; AERO 390; ENGR 301				X	
ENCS 282	Technical Writing and Communication	3.00	Engineering Writing Test (EWT), or ENCS 272 (min. C-)		X	X	X	X
ENGR 201	Professional Practice and Responsibility	1.50			X		X	X
ENGR 202	Sustainable Development and Environmental Stewardship	1.50			X	X	X	X
ENGR 213	Applied Ordinary Differential Equations	3.00	MATH 205	MATH 204	X		X	X
ENGR 233	Applied Advanced Calculus	3.00	MATH 204, 205		X	X	X	X
ENGR 242	Statics	3.00	MATH 204; PHYS 204	ENGR 213	X		X	X
ENGR 243	Dynamics	3.00	ENGR 213, 242		X		X	X
ENGR 244	Mechanics of Materials	3.75	ENGR 213; ENGR 242 or 245	ENGR 233		X	X	X
ENGR 251	Thermodynamics I	3.00	MATH 203			X	X	X
ENGR 301	Engineering Management Principles and Economics	3.00			X	X	X	X
ENGR 311	Transform Calculus and Partial Differential Equations	3.00	ENGR 213, 233		X	X	X	X
ENGR 361	Fluid Mechanics I	3.00	ENGR 213, 233, 251		X		X	X
ENGR 371	Probability and Statistics in Engineering	3.00	ENGR 213, 233		X	X	X	X
ENGR 391	Numerical Methods in Engineering	3.00	ENGR 213, 233; COMP 248 or COEN 243 or MECH 215 or MIAE 215 or BCEE 2			X	X	X
ENGR 392	Impact of Technology on Society	3.00	ENCS 282; ENGR 201, 202		X	X	X	X
ENGR 411	Special Technical Report	1.00	ENCS 282; permission of the Department		X	X	X	X
ENGR 412	Honours Research Project	3.00	ENCS 282; 75cr in the program; min. CGPA 3.00; permission of the Department		X		X	X
Gen. Ed.	General Education Elective	3.00	List of courses available in the Undergraduate Calendar, Sec. 71.110		X	X	X	X
INDU 372	Quality Control and Reliability	3.00	ENGR 371					X
INDU 412	Human Factors Engineering	3.50	ENGR 371				X	
MECH 343	Theory of Machines	3.50	ENGR 213, 233, 243				X	X
MECH 344	Machine Element Design	3.00	ENGR 244; MECH 313 or MIAE 313	MECH 343			X	X
MECH 351	Thermodynamics II	3.50	ENGR 251				X	X
MECH 352	Heat Transfer I	3.50	ENGR 311, 361				X	X
MECH 361	Fluid Mechanics II	3.50	ENGR 361				X	X
MECH 368	Electronics for Mechanical Engineers	3.50	PHYS 205	ENGR 311			X	X
MECH 375	Mechanical Vibrations	3.50	AERO 371 or MECH 370			X	X	X
MECH 411	Instrumentation and Measurements	3.50	ENGR 311; AERO 371 or MECH 370				X	
MECH 412	Computer-Aided Mechanical Design	3.50	MECH 313 or MIAE 313				X	
MECH 422	Mechanical Behaviour of Polymer Composite Materials	3.00	ENGR 233, 244; MECH 221 or MIAE 221				X	
MECH 425	Manufacturing of Composites	3.50	MECH 311 or MIAE 311	MIAE 312			X	
MECH 426	Stress and Failure Analysis of Machinery	3.00	ENGR 233, 244; AERO 481 or MECH 321					X
MECH 460	Finite Element Analysis	3.75	ENGR 244, 391					X
MECH 476	Generative Design and Manufacturing in Engineering	3.00	MECH 313 or MIAE 313	AERO 390 or MECH 390	n/a	n/a	n/a	n/a
MECH 498	Topics in Mechanical Engineering	3.00			n/a	n/a	n/a	n/a
MIAE 211	Mechanical Engineering Drawing	3.50			X		X	X
MIAE 215	Programming for Mechanical and Industrial Engineers	3.50	MATH 204			X	X	X
MIAE 221	Materials Science	3.00	CHEM 205				X	X
MIAE 311	Manufacturing Processes	3.00	MECH 313 or MIAE 313		X		X	X
MIAE 312	Engineering Design and Manufacturing Processes Lab	1.00		MIAE 311	X		X	X
MIAE 313	Machine Drawing and Design	3.50	MECH 211 or MIAE 211				X	X

Note: In the case of discrepancies between this and the current Undergraduate Calendar, please contact your Undergraduate Program Assistant for clarification.
This information was compiled 16/03/2022