

	SUMMER /1		FALL /2		WINTER /4	
YEAR 1			ENGR 213 Applied Ord. Differential Eq. Prerequisite: MATH 204 previously or concurrently; MATH 205	3.00	ENCS 282 Tech. Writing & Comm. Prerequisite: The Engineering Writing Test (EWT) or ENCS 272 must be completed prior to registering.	3.00
			ENGR 242 Statics Prerequisite: ENGR 213 previously or concurrently; PHYS 204; MATH 204.	3.00	ENGR 233 Applied Advanced Calculus Prerequisite: MATH 204; MATH 205	3.00
			MIAE 211 Mech. Engineering Drawing Prerequisite: none	3.50	ENGR 243 Dynamics Prerequisite: ENGR 213, 242	3.00
			MIAE 215 Prog. for Mech & Indu Eng. Prerequisite: MATH 204	3.50	ENGR 244 Mechanics of Materials Prerequisite: ENGR 213; ENGR 242 or 245; ENGR 233 previously or concurrently	3.75
			MIAE 221 Materials Science Prerequisite: CHEM 205	3.00	MIAE 313 Machine Drawing and Design Prerequisite: MECH 211 or MIAE 211	3.50
YEAR 2	ENGR 201 Professional Practice & Resp. Prerequisite: none	1.50	<b>WORK TERM 1</b>  (You must complete ENCS 282 before your first work-term)		MECH 321 Properties & Failure of Material Prerequisite: MECH 221 or MIAE 221	3.50
	ENGR 202 Sust. Dev. Enviro. Stewardship Prerequisite: none	1.50			MECH 343 Theory of Machines Prerequisite: ENGR 213, 233, 243	3.50
	ENGR 251 Thermodynamics I Prerequisite: MATH 203	3.00			MECH 351 Thermodynamics II Prerequisite: ENGR 251	3.50
	ENGR 311 Trans. Cal. & Partial Diff. Eq. Prerequisite: ENGR 213, 233	3.00			MECH 368 Electronics for Mech. Engineers Prerequisite: PHYS 205; ENGR 311 previously or concurrently	3.50
	MIAE 311 Manufacturing Processes Prerequisite: MECH 313 or MIAE 313	3.00			MIAE 380 Product Design & Development Prerequisite: MECH 211 or MIAE 211	3.00
	MIAE 312 EDML Lab Prerequisite: MIAE 311 previously or concurrently.	1.00				
YEAR 3	ENGR 301 Engr. Manage. Principles Econ Prerequisite: none	3.00	MECH 344 Machine Element Design Prerequisite: ENGR 244; MECH 313 or MIAE 313; MECH 343 previously or concurrently	3.00	<b>WORK TERM 2</b>	
	ENGR 361 Fluid Mechanics I Prerequisite: ENGR 213, 233, 251	3.00	MECH 352 Heat Transfer I Prerequisite: ENGR 311, 361	3.50		
	ENGR 371 Probability & Stats in Eng. Prerequisite: ENGR 213, 233	3.00	MECH 361 Fluid Mechanics II Prerequisite: ENGR 361	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	MECH 371 Analysis & Design Ctrl Sys. Prerequisite: ENGR 311; MECH 370	3.75		
	MECH 370 Modelling, Simulation, Ctrl Sys. Prerequisite: PHYS 205; ENGR 213; ENGR 311 previously or concurrently; ENGR 245 or 243	3.50	MECH 390 Mech Engr. Design Project Prerequisite: ENCS 282; MECH 311 or MIAE 311; MECH 343; MIAE 380; MECH 344 previously or concurrently	3.50		
YEAR 4	<b>WORK TERM 3</b>		MECH 375 Mechanical Vibrations Prerequisite: AERO 371 or MECH 370	3.50	ENGR 392 Impact of Technology on Society Prerequisite: ENCS 282; ENGR 201, 202	3.00
			General Studies (Undergraduate Calendar, Sec. 71.110)		3.00	
			Technical Electives (Undergraduate Calendar, Sec. 71.40.1) Review your advisement report for the number of credits required. Speak with your Undergraduate Program Assistant if you have any further questions		---	
			MECH 490 Capstone Mechanical Engineering Design Project Prerequisite: 75 credits in the program; ENGR 301; MECH 344, 390		4.00	

**DETAILED COURSE INFORMATION**  
**Mechanical Engineering 2021-22**

COURSE	TITLE	CREDIT	PRE-REQUISITE	CO-REQUISITE	SUM 1	SUM 2	FALL	WIN
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 446	Aerospace Vehicle Performance	3.00	MECH 361					X
AERO 455	Computational Fluid Dynamics for Aerospace Applications	3.75	ENGR 311, 391; MECH 361					X
AERO 462	Turbomachinery and Propulsion	3.00	MECH 351, 361				X	
AERO 464	Aerodynamics	3.00	MECH 361				X	X
AERO 465	Gas Turbine Design	3.50	AERO 462					X
AERO 480	Flight Control Systems	3.50	AERO 371 or ELEC 372 or MECH 371 or SOEN 385				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 485	Introduction to Space Systems	3.00	MECH 351, 361					X
AERO 486	Aircraft Stress Analysis	3.00	ENGR 243, 244				X	
AERO 487	Design of Aircraft Structures	3.00	AERO 486					X
ENCS 282	Technical Writing and Communication	3.00	Engineering Writing Test (EWT), or ENCS 272 (min. G)		X	X	X	X
ENGR 201	Professional Practice and Responsibility	1.50			X	X	X	X
ENGR 202	Sustainable Development and Environmental Stewardship	1.50			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	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	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
ENGR 412	Honours Research Project	3.00	ENCS 282; 75cr in the program; min. CGPA 3.00; permission of the Departme		X		X	X
Gen. Ed.	General Education Elective	3.00	List of courses available in the Undergraduate Calendar, Sec. 71.110					
INDU 372	Quality Control and Reliability	3.00	ENGR 371					X
INDU 410	Safety Engineering	3.00	MECH 311 or MIAE 311				X	
INDU 411	Computer Integrated Manufacturing	3.50	MECH 311 or MIAE 311					X
MECH 321	Properties and Failure of Materials	3.50	MECH 221 or MIAE 221					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 370	Modelling and Analysis of Dynamic Systems	3.50	PHYS 205; ENGR 213; ENGR 245 or 243	ENGR 311		X	X	X
MECH 371	Analysis and Design of Control Systems	3.75	ENGR 311 ; MECH 370				X	X
MECH 375	Mechanical Vibrations	3.50	AERO 371 or MECH 370			X	X	X
MECH 390	Mechanical Engineering Design Project	3.00	ENCS 282, MECH 311 or MIAE 311; MECH 343; MIAE 380	MECH 344			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 414	Computer Numerically Controlled Machining	3.50	MECH 311 or MIAE 311; MECH 412					X
MECH 415	Advanced Programming for Mechanical and Industrial Engineers	3.00	MECH 215 or MIAE 215				X	
MECH 421	Mechanical Shaping of Metals and Plastics	3.50	MECH 221 or MIAE 221					X
MECH 422	Mechanical Behaviour of Polymer Composite Materials	3.00	ENGR 233, 244; MECH 221 or MIAE 221				X	
MECH 423	Casting, Welding, Heat Treating and Non-Destructive Testing	3.50	MECH 221 or MIAE 221				X	
MECH 424	MEMS – Design and Fabrication	3.50	MECH 311 or MIAE 311; MECH 343					X
MECH 425	Manufacturing of Composites	3.50	MECH 311 or MIAE 311				X	
MECH 426	Stress and Failure Analysis of Machinery	3.00	ENGR 233, 244; AERO 481 or MECH 321					X
MECH 444	Guided Vehicle Systems	3.00	MECH 375		n/a	n/a	n/a	n/a
MECH 447	Fundamentals of Vehicle System Design	3.50	MECH 343				X	
MECH 452	Heat Transfer II	3.50	MECH 351, 352, 361					X
MECH 453	Heating, Ventilation and Air Conditioning Systems	3.00	MECH 352					X
MECH 454	Vehicular Internal Combustion Engines	3.00	MECH 351, 361					X
MECH 460	Finite Element Analysis	3.75	ENGR 244, 391					X
MECH 461	Gas Dynamics	3.50	MECH 361			X	X	
MECH 463	Fluid Power Control	3.50	ENGR 361; MECH 371				X	
MECH 468	Wind Turbine Engineering	3.00	MECH 343, 361					X
MECH 471	Microcontrollers for Mechatronics	3.50	ENGR 311; MECH 368					X
MECH 472	Mechatronics and Automation	3.50	MECH 215 or MIAE 215	MECH 371				X
MECH 473	Control System Design	3.50	ELEC 372 or MECH 371				X	
MECH 474	Mechatronics	3.75	ELEC 372 or MECH 371					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 490	Capstone Mechanical Engineering Design Project	4.00	75cr. in the program; ENGR 301; MECH 344, 390				X	
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			X		X	X
MIAE 313	Machine Drawing and Design	3.50	MECH 211 or MIAE 211				X	X
MIAE 380	Product Design and Development	3.00	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.