

**Recommended Course Sequence**  
**Mechanical Engineering (September Entry)**  
**2024-2025 Academic Year**

	SUMMER /1	FALL /2	WINTER /4
<b>YEAR 1</b>		<b>ENGR 213 Applied Ord. Differential Eq. (3.00)</b> The following course must be completed previously or concurrently: MATH 204 (Cegep Mathematics 105). The following course must be completed previously: MATH 205 (Cegep Mathematics 203).	<b>ENCS 282 Technical Writing &amp; Comm. (3.00)</b> Students must have satisfied the requirements in Section 71.20.7 Writing Skills Requirement, by passing the Engineering Writing Test (EWT) or by passing ENCS 272 with a grade of C- or higher, prior to enrolling.
		<b>ENGR 242 Statics (3.00)</b> The following course must be completed previously or concurrently: ENGR 213. The following courses must be completed previously: PHYS 204; MATH 204.	<b>ENGR 233 Applied Advanced Calculus (3.00)</b> The following course must be completed previously: MATH 204 (Cegep Mathematics 105); MATH 205 (Cegep Mathematics 203).
		<b>MIAE 211 Mech. Engineering Drawing (3.50)</b> Prerequisites: none.	<b>ENGR 243 Dynamics (3.00)</b> The following courses must be completed previously: ENGR 213, ENGR 242.
		<b>MIAE 215 Programming for Mech &amp; Indu Eng. (3.50)</b> The following course must be completed previously: MATH 204 (Cegep mathematics 105).	<b>ENGR 244 Mechanics of Materials (3.75)</b> The following courses must be completed previously: ENGR 213; ENGR 242 or ENGR 245. The following courses must be completed previously or concurrently: ENGR 233.
		<b>MIAE 221 Materials Science (3.00)</b> The following course must be completed previously: CHEM 205 (Cegep Chemistry 101).	<b>MIAE 313 Machine Drawing and Design (3.50)</b> The following course must be completed previously: MECH 211 or MIAE 211.
<b>YEAR 2</b>		<b>ENGR 201 Professional Practice &amp; Resp. (1.50)</b> Prerequisites: none.	<b>ENGR 361 Fluid Mechanics I (3.00)</b> The following courses must be completed previously: ENGR 213, ENGR 233, ENGR 251.
		<b>ENGR 202 Sust. Dev. Enviro. Stewardship (1.50)</b> Prerequisites: none.	<b>ENGR 371 Probability &amp; Stats in Eng. (3.00)</b> The following courses must be completed previously: ENGR 213, ENGR 233.
		<b>ENGR 251 Thermodynamics I (3.00)</b> The following course must be completed previously: MATH 203 (Cegep Mathematics 103).	<b>MECH 343 Theory of Machines (3.50)</b> The following courses must be completed previously: ENGR 213, ENGR 233, ENGR 243.
		<b>ENGR 311 Transform Calc. &amp; Partial Diff. Eq. (3.00)</b> The following courses must be completed previously: ENGR 213, ENGR 233.	<b>MECH 370 Modelling, Simulation, Ctrl Sys. (3.50)</b> The following courses must be completed previously: PHYS 205; ENGR 213; ENGR 243 or ENGR 245. The following course must be completed previously or concurrently: ENGR 311.
		<b>MIAE 311 Manufacturing Processes (3.00)</b> The following course must be completed previously: MECH 313 or MIAE 313.	<b>MIAE 380 Product Design &amp; Development (3.00)</b> The following course must be completed previously: MECH 211 or MIAE 211. The following course must be completed previously or concurrently: ENCS 282.
		<b>MIAE 312 EDML Lab (1.00)</b> The following course must be completed previously or concurrently: MIAE 311.	
<b>YEAR 3</b>		<b>MECH 344 Machine Element Design (3.00)</b> The following courses must be completed previously: ENGR 244; MECH 313 or MIAE 313. The following courses must be completed previously or concurrently: MECH 343.	<b>ENGR 301 Engr. Manage. Principles Econ (3.00)</b> Prerequisites: none.
		<b>MECH 352 Heat Transfer I (3.50)</b> The following courses must be completed previously: ENGR 311, ENGR 361.	<b>MECH 321 Properties &amp; Failure of Material (3.50)</b> The following course must be completed previously: MECH 221 or MIAE 221.
		<b>MECH 361 Fluid Mechanics II (3.50)</b> The following course must be completed previously: ENGR 361.	<b>MECH 351 Thermodynamics II (3.50)</b> The following course must be completed previously: ENGR 251.
		<b>MECH 373 Instrumentation &amp; Measurements (3.50)</b> The following courses must be completed previously: ENGR 311; AERO 371 or MECH 370.	<b>MECH 368 Electronics for Mech. Engineers (3.50)</b> The following courses must be completed previously: PHYS 205; MIAE 215.
		<b>MECH 390 Mech Engr. Design Project (3.50)</b> The following courses must be completed previously: ENCS 282; MECH 311 or MIAE 311; MECH 343; MIAE 380. The following course must be completed previously or concurrently: MECH 344.	<b>MECH 371 Analysis &amp; Design Ctrl Sys. (3.75)</b> The following courses must be completed previously: ENGR 311; MECH 370.
<b>YEAR 4</b>		<b>ENGR 391 Numerical Methods in Engr. (3.00)</b> The following courses must be completed previously: ENGR 213, ENGR 233; COMP 248 or COEN 243 or MECH 215 or MIAE 215 or BCEE 231.	<b>ENGR 392 Impact of Technology on Society (3.00)</b> The following courses must be completed previously: ENCS 282; ENGR 201, ENGR 202.
		<b>MECH 375 Mechanical Vibrations (3.50)</b> The following course must be completed previously: AERO 371 or MECH 370.	<b>General Studies (3.00)</b> (Undergraduate Calendar, Sec. 71.110)
		<b>Technical Electives (Undergraduate Calendar, Sec. 71.40.1)</b> Review your advisement report for the number of credits required. Speak with your Undergraduate Program Assistant if you have any further questions.	
		<b>MECH 490 Capstone Mechanical Engineering Design Project (6.00)</b> The following courses must be completed previously: ENGR 301; MECH 344, MECH 390; MIAE 312. Students must complete 75 credits in the program prior to enrolling.	

**DETAILED COURSE INFORMATION**  
**Mechanical Engineering 2024-25**

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	3.50	ENGR 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, ENGR 391; MECH 361					X
AERO 462	Turbomachinery and Propulsion	3.00	MECH 351, MECH 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, MECH 361					X
AERO 486	Aircraft Stress Analysis	3.00	ENGR 243, ENGR 244				X	
AERO 487	Design of Aircraft Structures	3.00	AERO 486					X
ENCS 282	Technical Writing and Communication	3.00	Passing the Engineering Writing Test (EWT) or ENCS 272 with a grade of C- or higher.		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
ENGR 213	Applied Ordinary Differential Equations	3.00	MATH 205 (Cegep Mathematics 203)	MATH 204 (Cegep Mathematics 105)	X		X	X
ENGR 233	Applied Advanced Calculus	3.00	MATH 204 (Cegep Mathematics 105); MATH 205 (Cegep Mathematics 203)		X	X	X	X
ENGR 242	Statics	3.00	ENGR 213	PHYS 204; MATH 204	X		X	X
ENGR 243	Dynamics	3.00	ENGR 213, ENGR 242		X		X	X
ENGR 244	Mechanics of Materials	3.75	ENGR 213; ENGR 242 or ENGR 245	ENGR 233		X	X	X
ENGR 251	Thermodynamics I	3.00	MATH 203		X	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, ENGR 233		X	X	X	X
ENGR 361	Fluid Mechanics I	3.00	ENGR 213, ENGR 233, ENGR 251		X		X	EC
ENGR 371	Probability and Statistics in Engineering	3.00	ENGR 213, ENGR 233		X	X	X	X
ENGR 391	Numerical Methods in Engineering	3.00	ENGR 213, ENGR 233; COMP 248 or COEN 243 or MECH 215 or MIAE 215 or BCEE 231			EC	EC	EC
ENGR 392	Impact of Technology on Society	3.00	ENCS 282; ENGR 201, ENGR 202		X	X	X	X
ENGR 411	Special Technical Report	1.00	ENCS 282. Permission of the Department is required.		X		X	X
ENGR 412	Honours Research Project	3.00	ENCS 282; 75cr in the BEng program, a CGPA of 3.00 or better. Permission of the Dept.		X		X	X
Gen. Ed.	General Education Elective	3.00	See section 71.7110 of the Undergraduate Calendar		X	X	X	X
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	MIAE 312				X
INDU 412	Human Factors Engineering	3.50	ENGR 371				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, ENGR 233, ENGR 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, ENGR 361				X	X
MECH 361	Fluid Mechanics II	3.50	ENGR 361				X	X
MECH 368	Electronics for Mechanical Engineers	3.50	PHYS 205; MIAE 215				X	X
MECH 370	Modelling and Analysis of Dynamic Systems	3.50	PHYS 205; ENGR 213; ENGR 243 or ENGR 245	ENGR 311		X	X	X
MECH 371	Analysis and Design of Control Systems	3.75	ENGR 311; MECH 370				X	X
MECH 373	Instrumentation and Measurements	3.50	ENGR 311; AERO 371 or MECH 370				X	
MECH 375	Mechanical Vibrations	3.50	AERO 371 or MECH 370			X	X	X
MECH 390	Mechanical Engineering Design Project	3.50	ENCS 282; MECH 311 or MIAE 311; MECH 343; MIAE 380	MECH 344			X	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	MIAE 312				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, ENGR 244; MECH 221 or MIAE 221				X	
MECH 423	Casting, Welding, Heat Treating and Non-Destructive Testing	3.50	MECH 221 or MIAE 221		N/A	N/A	N/A	N/A
MECH 424	MEMS – Design and Fabrication	3.50	MECH 311 or MIAE 311; MECH 343	MIAE 312	N/A	N/A	N/A	N/A
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, ENGR 244; AERO 481 or MECH 321		N/A	N/A	N/A	N/A
MECH 428	Failure Analysis of Machine Systems	3.00	MECH 344		N/A	N/A	N/A	N/A
MECH 444	Guided Vehicle Systems	3.00	MECH 375		N/A	N/A	N/A	N/A
MECH 447	Fundamentals of Vehicle System Design	3.00	MECH 343	MECH 375			X	
MECH 451	Renewable Energy: Fundamentals and Applications	3.00	MECH 351, MECH 352, MECH 361					X
MECH 452	Heat Transfer II	3.50	MECH 351, MECH 352, MECH 361		N/A	N/A	N/A	N/A
MECH 453	Heating, Ventilation and Air Conditioning Systems	3.00	MECH 352					X
MECH 454	Vehicular Internal Combustion Engines	3.00	MECH 351, MECH 361					X
MECH 460	Finite Element Analysis	3.75	ENGR 244, ENGR 391					X
MECH 461	Gas Dynamics	3.50	MECH 361				X	
MECH 463	Fluid Power Control	3.50	ENGR 361; MECH 371		N/A	N/A	N/A	N/A
MECH 468	Wind Turbine Engineering	3.00	MECH 343, MECH 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	6.00	ENGR 301; MECH 344, MECH 390; MIAE 312. Students must complete 75cr in the program prior to enrolling.				X	
MECH 498	Topics in Mechanical Engineering	3.00	Permission of the Department is required.		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 (Cegep mathematics 105)			X	X	X
MIAE 221	Materials Science	3.00	CHEM 205 (Cegep Chemistry 101)				X	X
MIAE 311	Manufacturing Processes	3.00	MECH 313 or MIAE 313		X		X	
MIAE 312	Engineering Design and Manufacturing Processes Lab	1.00			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	ENCS 282			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 March 2024.

\*AERO 417 reserved for AERO students  
\*\*MIAE 312 reserved for Co-op students