DETAILED COURSE INFORMATION 2024-25

COURSE	TITLE	PRE-REQUISITE	CO-REQUISITE	SUM 1	SUM 2	FALL	WIN
ACCO 220	Financial and Managerial Accounting						X
AERO 201	Introduction to Flight and Aerospace Systems	ENGR 213				X	
AERO 290	Introduction to Aircraft Design	AERO 201	ENCS 282				X
AERO 371	Modelling and Control Systems	PHYS 205; ENGR 213, ENGR 243	ENGR 311 or ELEC 342 or ELEC 364			X	X
AERO 390	Aerospace Engineering Design Project	AERO 290, AERO 371; ENCS 282				X	
AERO 417	Standards, Regulations and Certification	ENGR 201		X*		X	
AERO 431	Principles of Aeroelasticity	ENGR 361; MECH 375				X	
AERO 446	Aerospace Vehicle Performance	MECH 361					X
AERO 455	Computational Fluid Dynamics for Aerospace Applications	ENGR 311, ENGR 391; MECH 361					X
AERO 462	Turbomachinery and Propulsion	MECH 351, MECH 361				X	
AERO 464	Aerodynamics	MECH 361				X	X
AERO 465	Gas Turbine Design	AERO 462					X
AERO 471	Aircraft Hydro-Mechanical and Fuel Systems	AERO 201. Or, permission of the Department.					X
AERO 472	Aircraft Pneumatic and Electrical Power Systems	AERO 201; ENGR 361		N/A	N/A	N/A	N/A
AERO 480	Flight Control Systems	AERO 371 or ELEC 372 or MECH 371 or SOEN 385					X
AERO 481	Materials Engineering for Aerospace	MECH 221 or MIAE					X
AERO 482	Avionic Navigation Systems	ENGR 371 or COMP 233; AERO 371 or ELEC 372 or MECH 370 or SOEN 385					X
AERO 483	Integration of Avionics Systems	AERO 482; ELEC 481					X
AERO 485	Introduction to Space Systems	MECH 351, MECH 361					X
AERO 486	Aircraft Stress Analysis	ENGR 243, ENGR 244				X	
AERO 487	Design of Aircraft Structures	AERO 486					X
AERO 490	Capstone Aerospace Engineering Design Project	AERO 390; ENGR 301. Students must have completed 75 credits in the program.					X
BSTA 478	Data Mining Techniques	Permission from JMSB					X
BTM 480	Project Management	Permission from JMSB			X	X	X
COEN 212	Digital Systems Design I	MATH 204 (Cegep Mathematics 105)		X		X	X
COEN 231	Introduction to Discrete Mathematics	MATH 204 (Cegep Mathematics 105)		X		X	X
COEN 243	Programming Methodology I	MATH 204 (Cegep Mathematics 105)			X	X	X
COEN 244	Programming Methodology II	COEN 243 or MECH 215 or MIAE 215		X		X	X
COEN 311	Computer Organization and Software	COEN 212, COEN 243		X		X	X
COEN 313	Digital Systems Design II	COEN 212, COEN 231		X		X	X
COEN 317	Microprocessor Systems	COEN 311 or COMP 228 or SOEN 228; COEN 313				X	X
COEN 320	Introduction to Real-Time Systems	COEN 346 or COMP 346				X	X
COEN 346	Operating Systems	COEN 311; COMP 352 or COEN 352				X	X
COEN 352	Data Structures and Algorithms	COEN 231, COEN 244		X		X	X
COEN 366	Communication Networks and Protocols	COEN 346				X	X
COEN 413	Hardware Functional Verification	COEN 313				X	
COEN 421	Embedded Systems Design	COEN 317, COEN 320; SOEN 341					X
COEN 498	Topics in Computer Engineering	Permission of the Department is required.		X			
ELEC 242	Continuous-Time Signals and Systems	ELEC 273; ENGR 213		X		X	X
ELEC 251	Fundamentals of Applied Electromagnetics	ELEC 273 or ENGR 273	ENGR 233			X	X
ELEC 273	Basic Circuit Analysis	PHYS 205	ENGR 213	X		X	X
ELEC 311	Electronics I	ELEC 273				X	X
ELEC 331	Fundamentals of Electrical Power Engineering	ELEC 251, ELEC 273				X	X
ELEC 342	Discrete-Time Signals and Systems	ELEC 242 or ELEC 264			X	X	X
ELEC 351	Electromagnetic Waves and Guiding Structures	ELEC 242, ELEC 251				X	X
ELEC 367	Introduction to Digital Communications	ELEC 342 or ELEC 364; ENGR 371				X	X
ELEC 433	Power Electronics	ELEC 311, ELEC 331				X	
ELEC 442	Advanced Signal Processing	ELEC 342 or ELEC 364; ENGR 371					X
ELEC 458	Techniques in Electromagnetic Compatibility	ELEC 351		N/A	N/A	N/A	N/A
ELEC 464	Wireless Communications	ELEC 367					X
ELEC 481	Linear Systems	AERO 371 or ELEC 372 or MECH 371					X
ELEC 482	System Optimization	ENGR 391 or EMAT 391		X			
ELEC 483	Real-Time Computer Control Systems	AERO 371 or ELEC 372; ELEC 342 or ELEC 364					X
ELEC 498	Topics in Electrical Engineering	Permission of the Department is required.		N/A	N/A	N/A	N/A
ENCS 282	Technical Writing and Communication	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			X		X	X
ENGR 202	Sustainable Development and Environmental Stewardship			X		X	X

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DETAILED COURSE INFORMATION 2024-25

COURSE	TITLE	PRE-REQUISITE	CO-REQUISITE	SUM 1	SUM 2	FALL	WIN
ENGR 213	Applied Ordinary Differential Equations	MATH 205 (Cegep Mathematics 203)	MATH 204 (Cegep Mathematics 105)	X		X	X
ENGR 233	Applied Advanced Calculus	MATH 204 (Cegep Mathematics 105); MATH 205 (Cegep Mathematics 203)		X	X	X	X
ENGR 242	Statics	ENGR 213	PHYS 204; MATH 204	X		X	X
ENGR 243	Dynamics	ENGR 213, ENGR 242		X		X	X
ENGR 244	Mechanics of Materials	ENGR 213; ENGR 242 or ENGR 245	ENGR 233		X	X	X
ENGR 245	Mechanical Analysis	PHYS 204	ENGR 213	X			X
ENGR 251	Thermodynamics I	MATH 203		X	X	X	X
ENGR 301	Engineering Management Principles and Economics			X	X	X	X
ENGR 311	Transform Calculus and Partial Differential Equations	ENGR 213, ENGR 233		X	X	X	X
ENGR 361	Fluid Mechanics I	ENGR 213, ENGR 233, ENGR 251		X		X	EC
ENGR 371	Probability and Statistics in Engineering	ENGR 213, ENGR 233		X	X	X	X
ENGR 391	Numerical Methods in Engineering	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	ENCS 282; ENGR 201, ENGR 202		X	X	X	X
ENGR 411	Special Technical Report	ENCS 282. Permission of the Department is required.		X		X	X
ENGR 412	Honours Research Project	ENCS 282; 75cr in the BEng program, a CGPA of 3.00 or better. Permission of the Dept.		X		X	X
ENGR 490	Engr 490 Multidisciplinary Capstone Design Project (4 Credits)	Students must be eligible to enroll for AERO 490, INDU 490 or MECH 490					X
Gen. Ed.	General Education Elective	See section 71.7110 of the Undergraduate Calendar		X	X	X	X
INDU 211	Introduction to Production and Manufacturing Systems						X
INDU 311	Simulation of Industrial Systems	ENGR 371				X	
INDU 320	Production Engineering	INDU 323				X	
INDU 321	Lean Manufacturing	INDU 320					X
INDU 323	Operations Research I	ENGR 213, ENGR 233; INDU 211		X			X
INDU 324	Operations Research II	INDU 323				X	
INDU 330	Engineering Management	ENCS 282	ENGR 301			X	
INDU 342	Logistics Network Models	INDU 324				X	
INDU 371	Stochastic Models in Industrial Engineering	ENGR 371					X
INDU 372	Quality Control and Reliability	ENGR 371					X
INDU 410	Safety Engineering	MECH 311 or MIAE 311	MIAE 312			X	
INDU 411	Computer Integrated Manufacturing	MECH 311 or MIAE 311	MIAE 312				X
INDU 412	Human Factors Engineering	ENGR 371				X	
INDU 421	Facilities Design and Material Handling Systems	INDU 320	INDU 311			X	
INDU 423	Inventory Control	INDU 320				X	
INDU 424	Introduction to Enterprise Resource Planning	INDU 320					X
INDU 431	Quantitative Methods in Health-care Systems						X
INDU 441	Introduction to Six Sigma	INDU 372			X		X
INDU 466	Decision Models in Service Sector	ENGR 371; INDU 320					X
INDU 475	Advanced Concepts in Quality Improvement	INDU 372				X	
INDU 480	Cases in Industrial Engineering	INDU 311, INDU 324				X	
INDU 490	Capstone Industrial Engineering Design Project	ENGR 301; MIAE 380. Students must complete 75cr in the program prior to enrolling.	INDU 421			X	
INDU 498	Topics in Industrial Engineering	Permission of the Department is required.		N/A	N/A	N/A	N/A
MANA 300	Entrepreneurship: Launching Your Business					X	X
MECH 321	Properties and Failure of Materials	MECH 221 or MIAE 221					X
MECH 343	Theory of Machines	ENGR 213, ENGR 233, ENGR 243				X	X
MECH 344	Machine Element Design	ENGR 244; MECH 313 or MIAE 313	MECH 343			X	X
MECH 351	Thermodynamics II	ENGR 251				X	X
MECH 352	Heat Transfer I	ENGR 311, ENGR 361				X	X
MECH 361	Fluid Mechanics II	ENGR 361				X	X
MECH 368	Electronics for Mechanical Engineers	PHYS 205; MIAE 215				X	X
MECH 370	Modelling and Analysis of Dynamic Systems	PHYS 205; ENGR 213; ENGR 243 or ENGR 245	ENGR 311		X	X	X
MECH 371	Analysis and Design of Control Systems	ENGR 311; MECH 370				X	X
MECH 373	Instrumentation and Measurements	ENGR 311; AERO 371 or MECH 370				X	
MECH 375	Mechanical Vibrations	AERO 371 or MECH 370			X	X	X
MECH 390	Mechanical Engineering Design Project	ENCS 282; MECH 311 or MIAE 311; MECH 343; MIAE 380	MECH 344			X	X
MECH 412	Computer-Aided Mechanical Design	MECH 313 or MIAE 313				X	
MECH 414	Computer Numerically Controlled Machining	MECH 311 or MIAE 311; MECH 412	MIAE 312				X
MECH 415	Advanced Programming for Mechanical and Industrial Engineers	MECH 215 or MIAE 215				X	
MECH 421	Mechanical Shaping of Metals and Plastics	MECH 221 or MIAE 221					X

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DETAILED COURSE INFORMATION 2024-25

COURSE	TITLE	PRE-REQUISITE	CO-REQUISITE	SUM 1	SUM 2	FALL	WIN
MECH 422	Mechanical Behaviour of Polymer Composite Materials	ENGR 233, ENGR 244; MECH 221 or MIAE 221				X	
MECH 423	Casting, Welding, Heat Treating and Non-Destructive Testing	MECH 221 or MIAE 221		N/A	N/A	N/A	N/A
MECH 424	MEMS – Design and Fabrication	MECH 311 or MIAE 311; MECH 343	MIAE 312	N/A	N/A	N/A	N/A
MECH 425	Manufacturing of Composites	MECH 311 or MIAE 311	MIAE 312			X	
MECH 426	Stress and Failure Analysis of Machinery	ENGR 233, ENGR 244; AERO 481 or MECH 321		N/A	N/A	N/A	N/A
MECH 428	Failure Analysis of Machine Systems	MECH 344		N/A	N/A	N/A	N/A
MECH 444	Guided Vehicle Systems	MECH 375		N/A	N/A	N/A	N/A
MECH 447	Fundamentals of Vehicle System Design	MECH 343	MECH 375			X	
MECH 451	Renewable Energy: Fundamentals and Applications	MECH 351, MECH 352, MECH 361					X
MECH 452	Heat Transfer II	MECH 351, MECH 352, MECH 361		N/A	N/A	N/A	N/A
MECH 453	Heating, Ventilation and Air Conditioning Systems	MECH 352					X
MECH 454	Vehicular Internal Combustion Engines	MECH 351, MECH 361					X
MECH 460	Finite Element Analysis	ENGR 244, ENGR 391					X
MECH 461	Gas Dynamics	MECH 361				X	
MECH 463	Fluid Power Control	ENGR 361; MECH 371		N/A	N/A	N/A	N/A
MECH 468	Wind Turbine Engineering	MECH 343, MECH 361	MECH 344, MECH 371				X
MECH 471	Microcontrollers for Mechatronics	ENGR 311; MECH 368					X
MECH 472	Mechatronics and Automation	MECH 215 or MIAE 215	MECH 371				X
MECH 473	Control System Design	ELEC 372 or MECH 371				X	
MECH 474	Mechatronics	ELEC 372 or MECH 371					X
MECH 476	Generative Design and Manufacturing in Engineering	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	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	Permission of the Department is required.		N/A	N/A	N/A	N/A
MIAE 211	Mechanical Engineering Drawing			X		X	X
MIAE 215	Programming for Mechanical and Industrial Engineers	MATH 204 (Cegep mathematics 105)			X	X	X
MIAE 221	Materials Science	CHEM 205 (Cegep Chemistry 101)				X	X
MIAE 311	Manufacturing Processes	MECH 313 or MIAE 313		X		X	
MIAE 312	Engineering Design and Manufacturing Processes Lab		MIAE 311	X**		X	
MIAE 313	Machine Drawing and Design	MECH 211 or MIAE 211				X	X
MIAE 380	Product Design and Development	MECH 211 or MIAE 211	ENCS 282			X	X
SOEN 341	Software Process	COMP 352 or COEN 352; ENCS 282				X	X
SOEN 342	Software Requirements and Specifications	SOEN 341				X	X
SOEN 343	Software Architecture and Design	SOEN 341; SOEN 342				X	X

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