University of Manitoba | Price Faculty of Engineering
Department of Mechanical Engineering

Technical Elective Information for 2023/2024

Mechanical Engineering Undergraduate Technical Electives	Prerequisites	Fall 2023	Winter 2024
Aerospace Option List A: (All 3 from list A)			
MECH 3520 Aerodynamics	MECH 3492	Ferguson	
MECH 4182 Aerospace Structures: Analysis and Design	MECH 3502		Telichev
MECH 4192 Aerospace Materials and Manufacturing Processes	MECH 3542		Jayaraman
Aerospace Option Cont. List B: (Choose 2 from list B)			
MECH 3582 Manufacturing Planning and Quality Control	MECH 2112	Peng	
MECH 4200 Gas Turbine Propulsion Systems	MECH 2202, 3520	Not Offered 2023/24	
MECH 4452 Aircraft Performance, Dynamics, and Design	MECH 3520	Chatoorgoon	
ENG 4110 Operational Excellence	STAT 2220 (MECH 3170 recom.)	Campbell	Campbell
Aerospace Stream (Choose 3 from list below)			
MECH 3520 Aerodynamics	MECH 3492	Ferguson	
MECH 4182 Aerospace Structures: Analysis and Design	MECH 3502		Telichev
MECH 4192 Aerospace Materials and Manufacturing Processes	MECH 3542		Jayaraman
MECH 4200 Gas Turbine Propulsion Systems	MECH 2202, 3520	Not Offered 2023/24	
MECH 4452 Aircraft Performance, Dynamics, and Design	MECH 3520	Chatoorgoon	
Manufacturing Stream (Choose 3 from list below)			
MECH 3582 Manufacturing Planning and Quality Control	MECH 2112	Peng	
MECH 3592 Simulation Modeling and Facilities Planning	MECH 2112		Peng
MECH 4330 Cont. Topics in Manufacturing 1: CIMA 1	MECH 2112	N. Balakrishnan	
MECH 4342 Cont. Topics in Manufacturing 2: CIMA 2	MECH 2112	**Offered Summer 2024 N. Balakrishnan**	
MECH 4342 Cont. Topics in Manufacturing 2: Precision Multi-Axis Control	MECH 3430	Khoshdarregi	
MECH 4900 Mechatronics System Design	MECH 4340		Sepehri
Materials Stream (Choose 3 from list below)			
MECH 4192 Aerospace Materials and Manufacturing Processes	MECH 3542		Jayaraman
MECH 4350 Topics in Eng. Matls 1: Properties and Apps of Nanomaterials	MECH 3542	Not Offered 2023/24	
MECH 4360 Topics in Eng. Materials 2: Biomaterials for Medical Applications	MECH 2272 CHEM 1110/1126 or 1310		Xing
MECH 4870 Fracture and Failure of Engineering Materials	MECH 3542	Zhu	
Solid Mechanics Stream (Choose 3 from list below)			
MECH 4182 Aerospace Structures: Analysis and Design	MECH 3502		Telichev
MECH 4322 Cont. Topics M.E. 2: Design of Biomechanical Devices	MECH 2112		O'Brien
MECH 4322 Cont. Topics M.E. 2: Reliability Engineering	STAT 2220 & MATH 2130 or MATH 2132	Not Offered 2023/24	
MECH 4322 Cont. Topics M.E. 2: Vibration Based Condition Monitoring	MECH 3420	Wu	
MECH 4452 Aircraft Performance, Dynamics, and Design	MECH 3520	Chatoorgoon	
MECH 4510 Fundamentals of Finite Element Analysis	MATH 2120 & 3132 and MECH 2222	Not Offered 2023/24	
MECH 4812 Automotive Engineering	MECH 3502 Pre/Co MECH 3420	Not Offered 2023/24	
Thermofluids Stream (Choose 3 from list below)			
MECH 3520 Aerodynamics	MECH 3492	Ferguson	
MECH 4200 Gas Turbine Propulsion Systems	MECH 2202 / 3520	Not Offered 2023/24	
MECH 4412 Heating, Ventilation, and Air Conditioning	MECH 2202	Guyot	
MECH 4560 Selected Topics in Fluid Mechanics 4M: Fluuid Turbulence	MATH 3132, MECH 3492		Tachie
MECH 4692 Renewable Energy	MECH 2202, 2262 Pre/Co 3460		Bibeau
MECH 4822 Numerical Heat Transfer in Fluid Flow	MATH 3132, MECH 3460, 3492	Ormiston	
Other Electives			
MECH 4162 Thesis – Students should have a 3.0 DGPA or higher	Eligible to Graduate	Kuhn (spanned course)	
MECH 4310 Cont. Topics in Mech Eng 1: Fluid Power Systems	MECH 2112		Sepehri

Technical Elective Option and Streams in Mechanical Engineering

Students are required to take has 5 Technical Elective (TE) slots to be filled with non-core courses of your choice from the list of technical electives offered each year. Students wishing to pursue a variety of Mechanical topics have the chance here to do so by choosing courses in a variety of subject/research areas.

The 5 Technical Elective spots can be filled with courses from our Aerospace Option or Streams in Aerospace, Materials, Solid Mechanics, Thermofluids and Manufacturing.

To obtain the Aerospace Option students must take all courses from List A and a choice of 2 from List B. A Stream consists of 3 courses out of 5 TE slots.

To obtain a stream on your transcript select 3 TE courses from the stream area of your choice and 2 TE courses from the same area, another area or Thesis.

Students interested in research and experimentation have the option of replacing 2 Technical Elective slots with a 6-credit-hour Thesis (MECH 4162). Work on the thesis is done under the supervision of a Faculty Advisor and begins in September with an April completion date, done in the student's graduating year.

Please note:
1) Technical Electives listed above may vary from year to year and may have limited space.
2) Students are urged to consult the Mechanical Engineering office or the website for a current list of technical electives offered.
3) Students must be in their graduating year to register for MECH 4162 Thesis.
4) Students may NOT use the same technical elective to count toward multiple streams.