MECHANICAL ENGINEERING (MECH)

School of Engineering, College of Engineering and Physical Sciences

Mechanical Engineering at Guelph is built around concepts of sustainability and sustainable design to equip graduates to tackle issues associated with emerging technologies. Graduates in mechanical engineering are able to apply mathematical, scientific and engineering principles to a wide variety of fields and find employment across the private and public sectors. The program provides students with a common base of knowledge essential to mechanical engineering, and then allows them to select from a menu of electives to attain a degree of specialization in one of five areas, or to choose electives which broaden their general knowledge base. Elective concentrations are available in the areas of wind and solar energy, food and beverage engineering, mechatronics, manufacturing system design and biomechanics.

Major Requirements (Honours)

This is a major within the degree: Bachelor of Engineering (calendar.uoguelph.ca/undergraduate-calendar/degree-programs/bachelor-engineering-beng/)**.**

Code	Title	Credits
Semester 1		
CHEM*1040	General Chemistry I	0.50
CIS*1500	Introduction to Programming	0.50
ENGG*1100	Engineering and Design I	0.75
MATH*1200	Calculus I	0.50
PHYS*1130	Physics with Applications	0.50
Semester 2		
ENGG*1210	Engineering Mechanics I	0.50
ENGG*1500	Engineering Analysis	0.50
MATH*1210	Calculus II	0.50
PHYS*1010	Introductory Electricity and Magnetism	0.50
0.50 restricted electives		0.50
Semester 3		
ENGG*1070	Occupational Health and Safety	0.25
ENGG*2100	Engineering and Design II	0.75
ENGG*2120	Material Science	0.50
ENGG*2160	Engineering Mechanics II	0.50
ENGG*2400	Engineering Systems Analysis	0.50
MATH*2270	Applied Differential Equations	0.50
Semester 4		
ENGG*2180	Introduction to Manufacturing Processes	0.50
ENGG*2230	Fluid Mechanics	0.50
ENGG*2340	Kinematics and Dynamics	0.50
ENGG*2450	Electric Circuits	0.50
MATH*2130	Numerical Methods	0.50
STAT*2120	Probability and Statistics for Engineers	0.50
Semester 5		
ENGG*3240	Engineering Economics	0.50
ENGG*3260	Thermodynamics	0.50
ENGG*3280	Machine Design	0.75
ENGG*3510	Electromechanical Devices	0.50
HIST*1250	Science and Technology in a Global Context	0.50
0.50 restricted electives		0.50
Semester 6		
ENGG*3100	Engineering and Design III	0.75
ENGG*3370	Applied Fluids and Thermodynamics	0.50
ENGG*3410	Systems and Control Theory	0.50
ENGG*3430	Heat and Mass Transfer	0.50
1.00 restricted electives		1.00
Semester 7		
ENGG*3140	Mechanical Vibration	0.50
ENGG*4000	Proposal for Engineering Design IV	0.00
2.50 restricted electives		2.50
Semester 8		
ENGG*4160	Mechanical Engineering Design IV	1.00
1.75 restricted electives		1.75

Restricted Electives

(see Program Guide for more information)

The Engineering Program requires Mechanical Engineering students to complete the following combination of elective credits, totaling a minimum of 6.25 credits, to complete their program. Students can take a maximum of 1.50 credits of elective courses at the 1000 course level.

Code	Title	Credits
2.00 credits from Complementary Studies Electives:		
Consult the Program Guide for a full list of courses eligible for Complementary Studies Electives.		
3.50 credits of Mechanical Engineering Electives, List MECH-1:		
ENGG*2410	Digital Systems Design Using Descriptive Languages	0.50
ENGG*3070	Integrated Manufacturing Systems	0.50
ENGG*3080	Energy Resources and Technologies	0.50
ENGG*3120	Computer Aided Design and Manufacturing	0.75
ENGG*3150	Engineering Biomechanics	0.50
ENGG*3170	Biomaterials	0.50
ENGG*3250	Energy Management and Utilization	0.50
ENGG*3390	Signal Processing	0.50
ENGG*3450	Electronic Devices	0.50
ENGG*3490	Introduction to Mechatronic Systems Design	0.75
ENGG*3640	Microcomputer Interfacing	0.50
ENGG*3700	Optimization for Engineers	0.50
ENGG*4050	Quality Control	0.50
ENGG*4230	Energy Conversion	0.75
ENGG*4430	Neuro-Fuzzy and Soft Computing Systems	0.50
ENGG*4440	Computational Fluid Dynamics	0.50
ENGG*4460	Robotic Systems	0.50
ENGG*4470	Finite Element Analysis	0.50
ENGG*4490	Sampled Data Control Design	0.75
ENGG*4510	Assessment and Management of Risk	0.50
ENGG*4660	Medical Image Processing	0.50

0.75 credits of Mechanical Engineering Design Electives, List MECH-2:

ENGG*4030	Manufacturing System Design	0.75
ENGG*4220	Interdisciplinary Mechanical Engineering Design	0.75
ENGG*4400	Biomechanical Engineering Design	0.75
ENGG*4480	Advanced Mechatronic Systems Design	0.75
ENGG*4580	Sustainable Energy Systems Design	0.75

Co-op Requirements (Honours)

This is a major within the degree: Bachelor of Engineering (calendar.uoguelph.ca/undergraduate-calendar/degree-programs/bachelor-engineering-beng/)**.**

The Co-op program in Mechanical Engineering s a five year program, including five work terms. Students must follow the academic work schedule as outlined below (also found on the Co-operative Education website: https://www.recruitguelph.ca/cecs/).

Academic and Co-op Work Term Schedule

Year	Fall	Winter	Summer
1	Academic Semester 1	Academic Semester 2	Off
2	Academic Semester 3 COOP*1100	Academic Semester 4	COOP*1000 Work Term I
3	Academic Semester 5	COOP*2000 Work Term II	COOP*3000 Work Term III
4	Academic Semester 6	Academic Semester 7	COOP*4000 Work Term IV
5	COOP*5000 Work Term V	Academic Semester 8	N/A

Please refer to the Co-operative Education program policy with respect to work term performance grading, work term report grading and program completion requirements.

For additional program information students should consult with their Co-op Co-ordinator and Co-op Faculty Advisor, listed on the Co-operative Education web site.

Credit Summary

(26.00 Total Credits)

Code	Title	Credits
Required Core Courses		17.25
MECH-1 Mechanical Engineering Electives		3.50
MECH-2 Mechanical Engineering Design Electives		0.75
Complementary Studies Electives		2.00
Co-op Work Terms		2.50
Total Credits		**26**

Recommended Program Sequence

Code	Title	Credits
Semester 1 - Fall		
CHEM*1040	General Chemistry I	0.50
CIS*1500	Introduction to Programming	0.50
ENGG*1100	Engineering and Design I	0.75
MATH*1200	Calculus I	0.50
PHYS*1130	Physics with Applications	0.50
Semester 2 - Winter		
ENGG*1210	Engineering Mechanics I	0.50
ENGG*1500	Engineering Analysis	0.50
MATH*1210	Calculus II	0.50
PHYS*1010	Introductory Electricity and Magnetism	0.50
0.50 restricted electives		0.50
Summer Semester		
No academic semester or work term		
Semester 3 - Fall		
COOP*1100	Introduction to Co-operative Education	0.00
ENGG*1070	Occupational Health and Safety	0.25
ENGG*2100	Engineering and Design II	0.75
ENGG*2120	Material Science	0.50
ENGG*2160	Engineering Mechanics II	0.50
ENGG*2400	Engineering Systems Analysis	0.50
MATH*2270	Applied Differential Equations	0.50
Semester 4 - Winter		
ENGG*2180	Introduction to Manufacturing Processes	0.50
ENGG*2230	Fluid Mechanics	0.50
ENGG*2340	Kinematics and Dynamics	0.50
ENGG*2450	Electric Circuits	0.50
MATH*2130	Numerical Methods	0.50
STAT*2120	Probability and Statistics for Engineers	0.50
Summer Semester		
COOP*1000	Co-op Work Term I	0.50
Semester 5 - Fall		
ENGG*3240	Engineering Economics	0.50
ENGG*3260	Thermodynamics	0.50
ENGG*3280	Machine Design	0.75
ENGG*3510	Electromechanical Devices	0.50
HIST*1250	Science and Technology in a Global Context	0.50
0.50 restricted electives		0.50
Winter Semester		
COOP*2000	Co-op Work Term II	0.50
Summer Semester		
COOP*3000	Co-op Work Term III	0.50
Semester 6 - Fall		
ENGG*3140	Mechanical Vibration	0.50
2.50 restricted electives		2.50
Semester 7 - Winter		
ENGG*3100	Engineering and Design III	0.75
ENGG*3370	Applied Fluids and Thermodynamics	0.50
ENGG*3410	Systems and Control Theory	0.50
ENGG*3430	Heat and Mass Transfer	0.50
1.00 restricted electives		1.00
Summer Semester		
COOP*4000	Co-op Work Term IV	0.50
Fall Semester		
COOP*5000	Co-op Work Term V	0.50

ENGG*4000	Proposal for Engineering Design IV	0.00
Semester 8 - Winter		
ENGG*4160	Mechanical Engineering Design IV	1.00
1.75 restricted electives		1.75

Restricted Electives

(see Program Guide for more information)

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ENGG*3070	Integrated Manufacturing Systems	0.50
ENGG*3080	Energy Resources and Technologies	0.50
ENGG*3120	Computer Aided Design and Manufacturing	0.75
ENGG*3150	Engineering Biomechanics	0.50
ENGG*3170	Biomaterials	0.50
ENGG*3250	Energy Management and Utilization	0.50
ENGG*3390	Signal Processing	0.50
ENGG*3450	Electronic Devices	0.50
ENGG*3490	Introduction to Mechatronic Systems Design	0.75
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ENGG*4460	Robotic Systems	0.50
ENGG*4470	Finite Element Analysis	0.50
ENGG*4490	Sampled Data Control Design	0.75
ENGG*4510	Assessment and Management of Risk	0.50
ENGG*4660	Medical Image Processing	0.50
0.75 credits of Mechanical Engineering Design Electives, List MECH-2:		
ENGG*4030	Manufacturing System Design	0.75
ENGG*4220	Interdisciplinary Mechanical Engineering Design	0.75
ENGG*4400	Biomechanical Engineering Design	0.75
ENGG*4480	Advanced Mechatronic Systems Design	0.75