

(For students admitted in 2024-25 under the 4-year degree)

## BEng in Mechanical Engineering

In addition to the requirements of their major programs, students are required to complete the University requirements for graduation. For details please refer to the respective section on this website.

Students may use no more than 6 credits earned from courses offered in self-paced online delivery mode to satisfy the graduation requirements of a degree program. This 6-credit limit does not apply to credits obtained through the credit transfer procedures of the University.

For students graduating with an additional major, they must take all the requirements specified for that major, within which they must complete at least 20 single-counted credits. These 20 credits cannot be used to fulfill any other requirements for graduation except for the 120-credit degree requirement.

Under the new 30-credit Common Core Program which is applicable to students admitted to the University in 2022-23 and thereafter, courses that have been counted towards Major Requirements are not allowed to be reused for fulfilment of the University Common Core Requirements. Students should look up the details of the Common Core Program including the general and School-/program-specific distributional requirements posted on the Common Core website where the link to it is available on this website.

### Major Requirements

#### Engineering Fundamental Course(s)

			Credit(s) attained
COMP		Note: COMP 1021 <u>OR</u> COMP 1022P <u>OR</u> COMP 2011 <u>OR</u> COMP 2012H	3-5
COMP	1021	Introduction to Computer Science	3
COMP	1022P	Introduction to Computing with Java	3
COMP	2011	Programming with C++	4
COMP	2012H	Honors Object-Oriented Programming and Data Structures	5
MATH		Note: [(MATH 1012 <u>OR</u> MATH 1013 <u>OR</u> MATH 1023) <u>AND</u> (MATH 1014 <u>OR</u> MATH 1024)] <u>OR</u> [MATH 1020]	4-7
MATH	1012	Calculus IA	4
MATH	1013	Calculus IB	3
MATH	1014	Calculus II	3
MATH	1020	Accelerated Calculus	4
MATH	1023	Honors Calculus I	3
MATH	1024	Honors Calculus II	3
MATH	2011	Introduction to Multivariable Calculus	3
MATH		Note: MATH 2111 <u>OR</u> MATH 2350 <u>OR</u> MATH 2351	3
MATH	2111	Matrix Algebra and Applications	3
MATH	2350	Applied Linear Algebra and Differential Equations	3
MATH	2351	Introduction to Differential Equations	3
PHYS		Note: PHYS 1112 <u>OR</u> PHYS 1312	3
PHYS	1112	General Physics I with Calculus	3
PHYS	1312	Honors General Physics I	3

CHEM/LIFS/ PHYS		Science 1000-level course (1 course from the specified course list)	3-4
CHEM	1008	Introductory Chemistry	3
CHEM	1012	General Chemistry B: Atomic Structure, Molecules, and Bonding Theories	3
LIFS	1901	General Biology I	3
PHYS	1101	Introductory Physics	4

## Required Course(s)

			<b>Credit(s) attained</b>
MECH	1906	Mechanical Engineering for Modern Life	3
MECH	1990	Industrial Training	0
MECH	2020	Statics and Dynamics	3
MECH	2040	Solid Mechanics I	3
MECH	2210	Fluid Mechanics	3
MECH	2310	Thermodynamics	3
MECH	2410	Engineering Materials I	3
MECH	2520	Design and Manufacturing I	3
MECH	3030	Mechanisms of Machinery	3
MECH		Note: MECH 3300 <u>OR</u> MECH 3420 <u>OR</u> MECH 3520 <u>OR</u> MECH 3710	3
MECH	3300	Energy Conversion	3
MECH	3420	Engineering Materials II	3
MECH	3520**	Design and Manufacturing II	3
MECH	3710	Manufacturing Processes and Systems	3
MECH	3310	Heat Transfer	3
MECH	3610	Control Principles	3
MECH	3630	Electrical Technology	3
MECH	3830	Laboratory	3
MECH	3907	Mechatronic Design and Prototyping	3
MECH	4900	Final Year Design Project	6
ELEC	2420	Basic Electronics	3
ENGG	2010	Engineering Seminar Series	0

Students may opt to graduate with or without an option. Students who take an option MUST complete all requirements specified in addition to the major requirements.

## Option(s)

### Energy Option

<i>Elective Course(s)</i>			<b>Minimum credit(s) required</b>
MECH		MECH Electives in Energy (3 courses from the specified elective list. Courses taken as Major Required Courses or Elective Courses of other MECH Options may not be counted towards this elective requirement.)	9
MECH	1902	Energy Systems in a Sustainable World	3
MECH	3110	Materials for Energy Technologies	3
MECH	3300	Energy Conversion	3
MECH	3420	Engineering Materials II	3
MECH	4010	Materials Failure in Mechanical Applications	3
MECH	4340	Air Conditioning Systems	3
MECH	4350	Indoor Air Quality in Buildings	3
MECH	4360	Introduction to Intelligent Building Systems	3
MECH	4430	Materials Characterization	3
MECH	4902	Solar Energy Conversion Technology	3
MECH	4912	Green Technologies for Buildings, Energy and Water	3

### Engineering Design Option

<i>Elective Course(s)</i>			<b>Minimum credit(s) required</b>
MECH		MECH Electives in Engineering Design (3 courses from the specified elective list. Courses taken as Major Required Courses or Elective Courses of other MECH Options may not be counted towards this elective requirement.)	9
MECH	3510	Computer-Aided Design and Manufacturing	3
MECH	3520**	Design and Manufacturing II	3
MECH	3710	Manufacturing Processes and Systems	3
MECH	4450	Introduction to Finite Element Analysis	3
MECH	4710	Introduction to Robotics	3
MECH	4720	Introduction to Precision Engineering	3
MECH	4740	Numerical Methods in Engineering	3

### Materials Option

<i>Elective Course(s)</i>			<b>Minimum credit(s) required</b>
MECH		MECH Electives in Materials (3 courses from the specified elective list. Courses taken as Major Required Courses or Elective Courses of other MECH Options may not be counted towards this elective requirement.)	9
MECH	3110	Materials for Energy Technologies	3

MECH	3400	Introduction to Composite Materials	3
MECH	3420	Engineering Materials II	3
MECH	4010	Materials Failure in Mechanical Applications	3
MECH	4430	Materials Characterization	3
MECH	4450	Introduction to Finite Element Analysis	3
MECH	4750	Vibration, Control and Programming	3

**Research Option**

*Required Course(s)*

**Credit(s)  
attained**

MECH	4995	Research Project	6
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**\*\*Remarks on course(s):**  
 - MECH 3520: The course was last offered in 2019-20 and was deleted subsequently.