



**Mechanical Engineering  
Fourth Year Program, 2018-19  
Program Compulsory and Elective Course Advising**

**Mechanical Engineering Fourth Year Curriculum:**

ENGR 413 Law and Ethics for Engineers	3
ENGR 476 Mechanics of Materials II	3
ENGR 499 Engineering Capstone Design Project	6
Design Electives <sup>1,3</sup>	12
Technical Electives <sup>2,3</sup>	12
<b>Total Credits</b>	<b>36</b>

<sup>1</sup> The four design electives are chosen from the list of Approved Mechanical Engineering Design Electives given below. These design electives differ from technical electives in that they have 50% engineering design content, as defined by the Canadian Engineering Accreditation Board (CEAB).

<sup>2</sup> The four technical electives are chosen from the list of Approved Mechanical Engineering Technical Electives given below or are chosen in accordance with the Alternative Mechanical Engineering Technical Electives given below.

<sup>3</sup> As part of the electives students are required to select either ENGR491 or ENGR 492

**Approved Mechanical Design Electives\*\***Term 1:

ENGR 401 Bio Instrumentation  
ENGR 406 Microelectromechanical Systems  
ENGR 458 Power Electronics  
ENGR 482 Biomedical Engineering

Term 2:

ENGR 416 Advanced Manufacturing CAD/CAM/  
ENGR 454 Motor Drive Systems  
ENGR 485 Heating, Ventilating and Air Conditioning  
ENGR 492 Finite Element Methods

**Approved Mechanical Technical Electives\***Term 1:

ENGR 402 BioTechnology  
ENGR 456 Electromechanical Energy Storage Systems  
ENGR 480 Modern Control  
ENGR 484 Heat and Mass Transfer  
ENGR 489 Multicriteria Optimization and Design of Experiments  
ENGR 490 Fluid Machinery  
ENGR 491 Computational Fluid Dynamics  
ENGR 497 Combustion

Term 2:

ENGR 417 Pipeline Integrity Management  
ENGR 433 Construction Engineering and Management  
ENGR 453 Internet of Things  
ENGR 469 Polymer Design  
ENGR 475 Materials Selection and Design  
ENGR 478 Alternative Energy Systems  
ENGR 479 Measurement Principles in Thermo-Fluids  
ENGR 481 Mechatronics  
ENGR 495 Tissue Engineering  
ENGR 4xx Technology and society

\* Note that these ENGR courses are subject to minimum and maximum enrolments. The School of Engineering reserves the right to cancel an ENGR course if the minimum enrolment is not met. In such a case, you will be notified via e-mail about the cancellation. Check the UBC Student Service Centre to see the course availability.

**Alternative Mechanical Technical Electives**

1. All approved Mechanical design electives listed above are approved technical electives and any design elective taken over and above those required will count towards the technical elective requirement.
2. All ENGR 300 and 400-level courses can be credited as technical electives. Note that registration in such courses is subject to prerequisite requirements (or instructor approval if the prerequisite requirements are not met and need to be waived)
3. A maximum of two graduate 500-level courses (i.e., 6 credits) from within the School of Engineering may be approved as technical electives. For courses cross-listed as undergraduate 400 level and graduate 500 level courses, you must register in the undergraduate version. You must have a minimum average of 76% in your completed 300 and 400 level courses to be eligible for registration in graduate courses. Graduate courses being offered are listed as ENGR 5XX courses on the Student Services Centre.
4. Students may take a maximum of two undergraduate 300 or 400 level courses (6 credits) from outside the School of Engineering as technical electives. To register for in an external course for credit as a technical elective, you first require the permission of the Mechanical Engineering Program Coordinator to take the external course. Then, if you are missing the course's prerequisite(s), you need the permission of the external course's instructor, to waive the prerequisite(s). You may require assistance from the external program's advisor to register you in the course, as the School of Engineering cannot register you in non-ENGR courses. Some external courses are pre-approved as technical electives—and thus do not require permission from the Mechanical Engineering Program Coordinator. These pre-approved technical electives are listed here\*\*:

COSC 301 Introduction to Data Analytics  
COSC 315 Introduction. to Operating Systems  
COSC 322 Introduction. to Artificial Intelligence  
COSC 406 Numerical Optimization  
MATH 319 Differential Equations II  
MATH 340 Introduction to Linear Programming

MATH 350 Complex Variables and Applications  
PHYS 328 Advanced Mechanics  
PHYS 361 Experimental Techniques  
PHYS 420 Data and Image Processing  
STAT 310 Applied Regression Analysis

\*\* Note that not all of these courses are offered each academic year. Check the UBC Student Service Centre to see the course availability.

For fourth year course advising, contact the Mechanical Program Coordinator: Dr. Rudolf Seethaler, [rudolf.seethaler@ubc.ca](mailto:rudolf.seethaler@ubc.ca)  
For technical registration inquiries, contact the Engineering Advisor: Ms. Renee Leboe, [renee.leboe@ubc.ca](mailto:renee.leboe@ubc.ca)