UBC Okanagan
ACADEMIC CALENDAR
2018/19

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School of Engineering

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A School within the Faculty of Applied Science

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The School of Engineering at the UBC Okanagan campus offers the Bachelor of Applied Science (B.A.Sc.) degree in Civil Engineering, Electrical Engineering, and Mechanical Engineering. Each program is accredited by the Canadian Engineering Accreditation Board. Qualified applicants can be admitted directly from secondary school into Engineering One. Students may also enter the Engineering program after having successfully completed the equivalent of first-year Science. There are also admission routes via engineering transfer programs at various colleges and Engineering Bridge programs with Okanagan College and Camosun College.

Following entry from secondary school, the B.A.Sc. degree generally requires four or five years to complete.

The first-year Engineering One program is common to all Engineering disciplines and lays the foundation for Engineering specializations in subsequent years. Engineering One is equivalent to first-year Engineering at the UBC Vancouver campus. The engineering-specific curriculum emphasizes project-based team learning, and offers first-year students the opportunity to implement the principles of engineering in a second-term design project. Upon successful completion of Engineering One, students have the option of continuing at the UBC Okanagan campus in the second year of the integrated program - Engineering Two - or transferring to the UBC Vancouver campus. Students who elect to transfer compete for program spaces with students at the UBC Vancouver campus.

Students who choose to continue their Engineering education at the UBC Okanagan campus will take the Engineering Two program, which is common to all specializations. Students will specialize in Civil Engineering, Electrical Engineering, or Mechanical Engineering in their third- and fourth-year programs.

Scheduled field trips and the activities of professional and technical societies complement the undergraduate programs, and students are expected to participate in them as fully as circumstances permit.

An optional Co-operative Education program, which integrates academic study with supervised work experience, is available during the second year.

Bachelor of Applied Science Program

Bachelor of Applied Science Program > Admission Requirements
Application for admission to the School of Engineering must be made through Enrolment Services. Procedures, policies, and admission requirements of UBC and the School of Engineering are specified in Admissions [link](http://www.calendar.ubc.ca/okanagan/index.cfm?tree=2,0,0,0).

Due to limited resources, the School has been authorized to restrict enrolment in Engineering One and within individual Engineering programs at the second-year level. Attainment of the minimum academic requirements listed below implies that the applicant is eligible for selection, but does not provide assurance of admission. The selection is based on academic standing. For most Engineering programs, the competition for places is such that standing above the minimum prescribed requirements is necessary to ensure admission.

**Note:** proficiency in mathematics is an important part of preparing for Engineering courses. Experience has shown that UBC students with grades below 65% in mathematics (below B at a college) are likely to have difficulty with many Engineering courses.

**Admission from BC/Yukon Grade 12 (or equivalent)**

In addition to satisfying University admission requirements, applicants must have completed mathematics, physics, and chemistry at the British Columbia Grade 12 level, or the equivalent. Students will be selected on the basis of their standing in Grade 12 courses in mathematics, chemistry, physics, and English. Applicants from schools where either Physics 12 or Chemistry 12 is not available may petition to be excused this deficiency.

**Admission from a Post-Secondary Institution**

Applicants from another faculty at UBC or another post-secondary institution may be considered for admission to the School of Engineering. An overall average of at least 65%, including any failed courses, is required. The overall average is calculated in accordance with the general admission requirement for undergraduate admission as specified in Applicants from a College or University [link](http://www.calendar.ubc.ca/okanagan/index.cfm?tree=2,344,0,0).

Applicants must also have an average of at least 70% in all chemistry, mathematics, and physics courses that transfer to the first-year Engineering program. Courses to be considered in this average of mathematics, chemistry, and physics courses are not limited to the last 30 credits only. Where two courses, or one repeated course, have been taken which transfer to one of the courses of the first-year engineering program, only the grade of the latest course will be used in calculating this average.

Admission to the Engineering program is competitive. Applicants who meet all of these criteria are not guaranteed admission.

Applicants with fewer than 24 transferable credits from a post-secondary institution are evaluated against both secondary and post-secondary admission criteria.

Applicants with more than 24 credits that transfer to first-year Engineering may be eligible for second-year Engineering. Advice on transfer credit is available from the School of Engineering. Deficiencies from first year must be completed prior to graduation.

Students admitted to second year must complete a Second-Year Program Preference Form by June 15.

**Admission from UBC Engineering Transfer Programs**

Students who have completed first-year Engineering at a college offering a UBC transfer program are eligible to be considered for admission to second-year Engineering provided that they have obtained an overall grade average of at least 65%.
The Faculty of Applied Science delivers engineering programs at both UBC campuses: Okanagan and Vancouver. The Faculty has reserved space for all UBC Vantage College Engineering Stream students to be able to transition to a second year program. Half of the reserved spaces are located on the Okanagan campus, and the other half are located at the Vancouver campus.

UBC Vantage College students who pass all courses in the Engineering stream with an average of at least 60% will be eligible for year two of the BASc degree program.

Program selection is competitive, and all students will be asked to rank both their preferred campus and their eligible program.

Academic performance at the end of the winter session and a personal statement are considered in placing students into programs in second year. Students who do not successfully complete the full UBC Vantage College Engineering Stream or who achieve an average lower than 60% in the full program can apply to be reviewed on a case-by-case basis for evidence of academic promise for continued study in Engineering at UBC. The UBC Vantage College Engineering Stream is not equivalent to the direct entry BASc first year program. Therefore, while successful completion of the Vantage College Engineering Stream will result in eligibility for second year standing, there are program requirements normally completed in first year that will not have been met and must be completed prior to graduation. Please consult here for details on Vancouver Engineering programs and here for details on Okanagan Engineering programs.

Admission to a selected program is dependent on performance in first year. Details of the specific courses conforming to the above requirements are available from the Engineering Student Services office.

Students must complete APSC 176 and APSC 201 (or the equivalent) prior to promotion to third year. Students must pass APSC 201 (or equivalent) and APSC 258 (or equivalent) prior to promotion to fourth year.

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## Bachelor of Applied Science Program > Civil Engineering

In the third year and fourth years, students will follow a program in Civil Engineering, Electrical Engineering, or Mechanical Engineering.

The program is designed to provide students with a strong foundation in engineering principles and the opportunity to specialize in their field of interest. The program includes courses in structural engineering, environmental engineering, and transportation engineering, among others. Students also have the option to take electives from other disciplines to broaden their knowledge and skill set.

### Bachelor of Applied Science Program > Electrical Engineering

In the third year and fourth years, students will follow a program in Civil Engineering, Electrical Engineering, or Mechanical Engineering. The program is designed to provide students with a strong foundation in electrical engineering principles and the opportunity to specialize in their field of interest. The program includes courses in electrical circuit theory, digital systems design, and software engineering, among others. Students also have the option to take electives from other disciplines to broaden their knowledge and skill set.
Mechatronics Option

Available to Mechanical and Electrical students, the Mechatronics Option allows students interested in electromechanical systems integrated with embedded electronics, sensors, actuators, and related systems to have a course focus in these areas. Application to the Mechatronics Option is open to students with Year 2 standing (including Year 2 transfer students) in the Bachelor of Applied Science program specializing in Mechanical or Electrical Engineering. Applications for admission must be made through the Engineering Advising Office by May 31st. Admission will be competitive based on GPA and enrolment in this option is limited.

The Mechatronics Option under Electrical Engineering requires the following courses:

- COSC 121 and COSC 222
- Required 4th year courses (as listed above) and Elective requirements:

  Note that it is the student’s responsibility to ensure that the electives chosen meet the program requirements for design and technical elective graduation requirements.

The option consists of a typical third year, followed by a set of prescribed fourth year courses with 2 additional required Computer Science courses beyond the Bachelor of Applied Science degree.

Students may encounter difficulty fitting these 2 Computer Science (COSC) courses into their schedule. Careful planning is essential and completion of the Option may require a summer session or additional term of study beyond that required to complete the Bachelor of Applied Science degree alone.

Entry into and continuation in the Option requires that the student remains in Good Standing. Upon successful completion of the option, the notation “Mechatronics Option” will be added on the student’s transcript.

Electives to be chosen from a list of approved Mechatronics Option courses provided by the School of Engineering.

Bachelor of Applied Science Program > Manufacturing Engineering

Bachelor of Applied Science (B.A.Sc.) in MANUFACTURING ENGINEERING

Program Overview

In the second, third and fourth years, students will follow a program Manufacturing Engineering.

The Mission of the MANF program is to develop engineers with technical and managerial skills preparing them for soughtafter careers in the exceptionally demanding and evolving domain of advanced design and manufacturing.

Program Requirements:

- APSC 201
- APSC 246
- APSC 252
- APSC 253
- APSC 254
- APSC 255
- APSC 259
- APSC 260
- COSC 210
- MANF 230
- MANF 270
- Total Credits: 36

- ENGR 305
- ENGR 376
- ENGR 377
- ENGR 381
- ENGR 385
- ENGR 416
- COSC 470
- MANF 330
- MANF 368
- MANF 370
- MANF 386
- Total Credits: 36

- ENGR 413
- MANF 430
- MANF 450
- MANF 455
- MANF 480
- MANF 485
- MANF 470
- Technical Electives
- Humanities/Social Sciences Elective
- Total Credits: 36

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Bachelor of Applied Science Program > Mechanical Engineering

In the third and fourth years, students will follow a program in Civil Engineering, Electrical Engineering, or Mechanical Engineering.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ENGR 303</td>
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<td>ENGR 383</td>
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<td>ENGR 387</td>
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<tr>
<td>Total Credits</td>
<td>36</td>
</tr>
</tbody>
</table>

Note: Space in many courses is limited. Admission to the Mechanical Engineering option requires that the student remains in Good Standing. Entry into the program is limited. Applications for admission must be made through the Engineering Advising Office by May 31. Students might encounter difficulty filling the courses for the Minor into their program timetable; careful planning is essential, and completion of the Minor program will likely require an additional term or item beyond that required to complete the B.A.Sc. degree alone. To accommodate scheduling conflicts, students are encouraged to consider taking COSC courses in the Summer Session. The minor consists of 20 credits: 12 lower-level and 8 approved COSC credits. Subjects that are acceptable for credit towards the minor vary. More information can be found on the School of Engineering’s website.

Bachelor of Applied Science Program > Minor in Computer Science

Applications for admission to the Minor in Computer Science are open to all students in the Bachelor of Applied Science program. Admission will be competitive based on GPA. Applications for admission must be made through the Engineering Advising Office by May 31. Students might encounter difficulty filling the courses for the Minor into their program timetable; careful planning is essential, and completion of the Minor program will likely require an additional term or item beyond that required to complete the B.A.Sc. degree alone. To accommodate scheduling conflicts, students are encouraged to consider taking COSC courses in the Summer Session. The minor consists of 20 credits: 12 lower-level and 8 approved COSC credits. Subjects that are acceptable for credit towards the minor vary. More information can be found on the School of Engineering’s website.

Bachelor of Applied Science Program > Minor in Management

Students desiring a stronger foundation in management and entrepreneurship are encouraged to consider the Minor in Management. Upon successful completion of the minor program, the notation “Minor in Management” will be added to the student’s transcript. Admission to the program is limited. Applications for admission must be made through the Engineering Advising Office by May 31. For an application to be considered, the student must be eligible for at least third-year standing in the School of Engineering with a cumulative average of at least 70% in the previous two years. Meeting the stated minimum GPA requirement does not guarantee admission to the minor. Admission will be based on GPA in conjunction with a statement of intent to be submitted at the time of application. The minor consists of 21 credits:

- 3 credits, MGMT 100
- 18 credits: 400-level MGMT Courses (Prerequisite Courses may be required but will not count towards the 18 credits)
- Up to one MGMT course may be counted towards the B.A.Sc. technical elective requirement upon approval from the program coordinator.

Bachelor of Applied Science Program > Pre-Med Alternative Path (P-MAP)

This alternative path is intended for students with an engineering background wishing to apply to UBC’s medical school and potentially others. It provides access to courses strongly recommended by many medical schools for students to be considered for admission. Different medical schools have different requirements, so students are encouraged to consult with their School of Engineering academic advisor to determine the most appropriate courses to take. The course requirements are only part of the criteria used by medical schools to assess applications. It is the student’s responsibility to be informed of the applicable criteria. The ten P-MAP courses are integrated into the existing three engineering programs, and are taken in parallel with engineering courses. Four courses counted towards engineering requirements:

- ENGR 112 (prerequisite for P-MAP)
Bachelor of Applied Science Program > Co-operative Education Program

The Engineering Co-operative Education program is designed to provide motivated and qualified students with an industry-experience work placement experience to improve their understanding of engineering principles. The Engineering Co-op program is an optional, year-round component that requires completion of the Associate's Degree in Engineering Technology and a minimum of 2 work terms, each lasting two consecutive terms.

To graduate from the Engineering Co-op program, students must successfully complete the required number of work placements, in addition to the normal academic requirements. Normally, students transferring from other institutions may be given credit for work terms completed at their former institution, if they meet the following requirements:

- the work term was granted for experience in the same or similar discipline into which they are transferring.
- the student and employer agree that the work term was beneficial.
- the work term was undertaken in an appropriate engineering setting.
- the student has a satisfactory academic record.
- the work term was completed within the time frame specified by the employer.
- the student's performance in the work term was acceptable to the employer.

Regardless of the number of work terms accepted, students will be required to complete at least 50% of the required work terms in the new program into which they are transferring. Acceptance into a coop program as an institution does not guarantee acceptance into UBC's Engineering Co-op program. Acceptance of work terms from other programs can be negotiated on a case-by-case basis.

Note: Completion of this degree alone does not form an acceptable basis for application to associations of professional engineers in Canada or elsewhere.


The objective of this program is to meet an identified need to educate engineers with a unique combination of leadership and strong technical, management, and communication skills applicable to the resource engineering sector. This program is suited to students who wish to pursue their education in a modern, internationally recognized program to prepare for their careers in the mining and resource industry. Students admit to the M.E.L. in R.E.M. who normally possess a bachelor's degree in engineering and who meet the admission criteria, without the completion of the Pillar (Technical Foundation) requirements, as part of the program. Students admitted to the M.E.L. in R.E.M. will need to complete a technical foundation before admission into the program, as well as complete at least 90 credits of coursework. Students who have completed the Pillar (Technical Foundation) requirements may be granted admission on the recommendation of the Associate Director of Graduate Studies in the School of Engineering.

Admission is based on the following criteria:

- Relevant professional experience is considered a significant asset and should be normally a minimum of 3 years.
- Applicants must have completed a bachelor's degree in engineering from an accredited university, or the equivalent, and meet the English language requirements of the College of Graduate Studies.
- Applicants must also fulfill the standard English language requirements for the College of Graduate Studies' program to pursue for applicants who are considering taking a Doctor of Philosophy (Ph.D.) in the future. These requirements are determined by the Graduate Student Services Office.
- Applicants who are accepted into the program will register in, and pay for, the appropriate 6-credit Co-operative Education course (see Program and Course Fees). Students attending in the same or similar discipline in the same or similar discipline into which they are transferring.
- The completion time for this program is 12 months. Note: Completion of this degree alone does not form an acceptable basis for application to associations of professional engineers in Canada or elsewhere.
- A GED (General Educational Development) certificate is not accepted as evidence of completion of the Pillar (Technical Foundation) requirements. Students admitted to the M.E.L. in R.E.M. will need to complete a technical foundation before admission into the program, as well as complete at least 90 credits of coursework. Students who have completed the Pillar (Technical Foundation) requirements may be granted admission on the recommendation of the Associate Director of Graduate Studies in the School of Engineering.

Other Graduate Programs (M.A.Sc., M.Eng., Ph.D.)

Information on the Master of Applied Science (M.A.Sc.) (http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,285,981,1163), the Master of Engineering (M.Eng.) (http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,285,981,1162), and the Doctor of Philosophy (Ph.D.) (http://www.calendar.ubc.ca/okanagan/index.cfm?tree=18,285,981,1163) programs can be found under the College of Graduate Studies. Last updated: May 4, 2018

Professional Associations

The right to practice engineering and accept professional responsibility in Canada is limited to those who are registered members of the Association of Professional Engineers in the province concerned. During the period between graduation and registration, the graduate who intends to practice in BC should be enrolled with the Association as an "Engineer in Training." Professional Engineers in the province concerned. During the period between graduation and registration, the graduate who intends to practice in BC should be enrolled with the Association as an "Engineer in Training."