School of Engineering

Introduction

Bachelor of Applied Science Program

   Admission Requirements
   Academic Advising
   Academic Regulations
   Degree Requirements
   Years 1 & 2
   Civil Engineering
   Electrical Engineering
   Mechanical Engineering
   Minor in Computer Science
   Minor in Management
   Pre-Med Alternative Path (P-MAP)

Co-operative Education Program


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

Professional Associations

Academic Staff
Introduction

A School within the Faculty of Applied Science

Associate Dean and Director’s Offices
Rehan Sadiq, Associate Dean
Mina Hoofar, Director
The University of British Columbia
Okanagan Campus
Engineering, Management & Education Building
1137 Alumni Avenue
Kelowna, BC V1V 1V7
Tel: 250.807.8723
Fax: 250.807.9850
Email: engineering.okanagan@ubc.ca
Web: www.ubc.ca/okanagan/engineering/welcome.html

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 [http://www.calendar.ubc.ca/okanagan/index.cfm?tree=2,0,0).

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 [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%. 

© 2018 The University of British Columbia | Okanagan
Information in this Calendar is subject to change. Visit [www.calendar.ubc.ca/okanagan](http://www.calendar.ubc.ca/okanagan) for current details.
This document was generated on 13 Jul 2018 at 1:06 PM.
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 be waived and that must be completed prior to graduation. Please consult here for details on Vancouver Engineering programs and here for details on Okanagan Engineering programs.

Admission from Okanagan College Bridge Programs to Civil, Electrical, or Mechanical Engineering

Students with a two-year diploma in Civil, Electronic, or Mechanical Engineering Technology from Okanagan College will be eligible for admission to the B.A.Sc. program upon successful completion of an Engineering Bridge program with a minimum average of 60% in each course and a minimum average of 70% in all courses other than University Writing (ENG 100). Admission to a selected program is dependent on performance in first year.

Applications for readmission from non-current students should be directed to Enrolment Services.

Bachelor of Applied Science Program > Academic Advising

Academic advising is available through Engineering Advising. Engineering Advising assists students in academic planning, interpreting Faculty course requirements and regulations, and resolving academic and personal problems.

Bachelor of Applied Science Program > Academic Regulations

Dean's Honour List
Students in any Winter Session with a sessional average of at least 80% while taking 30 or more credits will receive the notation "Dean's Honour List" on their record. Degree with Distinction A student will be granted a degree with distinction upon graduation if he or she achieves an overall average of at least 80% on all 200-level and higher courses while registered in the B.A.Sc. program. Student Classification The required courses and electives for the Winter Session are shown in the following sections. The normal completion time is four to five years. Students may take higher loads than those shown below with the approval of the Dean's Office; To be considered full time, students must carry a credit load in the Winter Session equal at least 80% of the standard credit load for the year and programme in which they are registered. Note: The Faculty's definition of full-time status may differ from that of the Student Financial Assistance and Awards office in determining eligibility for financial assistance. Check with Student Services and Financial Support (http://www.calendar.ubc.ca/okanagan/index.php/#/events/308_1050) to ensure eligibility for scholarships and awards. Students with approval for a Winter Session credit load less than that required for full-time status will be considered part time. Part-time students will not normally be eligible for scholarships or for "Degree with Distinction" status. Students taking courses from more than one level will normally be given academic year status based on the program year of the majority of credits being taken. Examinations Examinations are held in December and in April. In any course that includes both lecture and laboratory work, students must complete the laboratory assignments with satisfactory standing before being admitted to the written examination of the course, and must pass in the material of both components before standing will be granted in the subject. The minimum passing mark in each course is 50%. Applications for special consideration for examinations missed due to a medical condition, emotional or other problems, must be submitted to the Dean, Faculty of Applied Science, no later than the first Monday of each term. Examinations are normally scheduled at the same time of day and location as the equivalent course at UBC. Students who fail a Winter Session course and require readmission only to the Winter Session can be granted credit for the subject. Students who are granted credit for a Winter Session course in the Spring Session must pay an additional fee and, if required, resit examinations. No additional credit load may be added to the second year of the B.A.Sc. program upon successful completion of the corresponding Okanagan Engineering Bridge program. Students must successfully complete an Engineering Technology program with a minimum grade of 60% in each course, and a minimum average of 70% in all courses other than University Writing (ENG 100). Admitted students will be required to take UBC Okanagan courses from a list provided by the School of Engineering to fulfill B.A.Sc. degree requirements. Typically, students admitted from each Engineering Bridge Program will require two and a half years of additional study at UBC Okanagan to complete B.A.Sc. degree requirements. Admission from Camosun College Engineering Bridge Programs to Civil Engineering Courses and Mechanical Engineering Courses are subject to a two-year program in Civil or Mechanical Engineering Technology in order to be admitted to the third year of the B.A.Sc. program in Civil Engineering or Mechanical Engineering upon successful completion of an Engineering Bridge program offered by Camosun College. Students must achieve a minimum of 60% in each course and a minimum average of 60% on all courses to be considered for admission to the B.A.Sc. program. Admitted students will be required to take additional UBC Okanagan campus courses from a list provided by the School of Engineering to fulfill B.A.Sc. degree requirements. Typically, students admitted from a Camosun College Engineering Bridge Program will require two and a half years of additional study at the UBC Okanagan campus to complete the B.A.Sc. degree requirements.

Bachelor of Applied Science Program > Admission Following Two-Year Technology Diploma Programs Not Including Bridge Programs

Students who do not successfully complete the full UBC Vantage College Engineering Stream program will not be eligible for second year standing. Please consult here for details on Vancouver Engineering programs and here for details on Okanagan Engineering programs.

Note:
Bachelor of Applied Science Program > Degree Requirements

Bachelor of Applied Science Program > Degree Requirements

Students will be granted a B.A.Sc. degree only after obtaining credit for all courses listed in the program of study for a given Engineering program. This requirement will normally be met by completing four Winter Sessions with full credit load (five Winter Sessions if completing the Co-operative Education Program). With the approval of the Dean's Office, students may be allowed to study on a part-time basis. Credit will be granted for courses completed during the Summer Session.

Students transferring into the program may be granted transfer credit if they have completed courses of equivalent content. Elective Courses in Engineering: Note: enrolment in elective courses offered by the School may be restricted. English Requirement The School of Engineering recognizes that good communication skills in English are essential to the understanding of course material and to the successful practice of engineering. To qualify for the B.A.Sc., students must choose APSC 171 (first year), APSC 172 (second year), APSC 173 (third year), APSC 174 (fourth year), and APSC 175 (fifth year). Students must choose one of APSC 171, APSC 172, APSC 173, APSC 174, or APSC 175. Upon completion of the fourth year, students will have completed the following courses: ENGR 123: Statics; ENGR 124: Dynamics; and APSC 171: Engineering Analysis I; and APSC 172: Engineering Analysis II; and APSC 173: Engineering Analysis III; and APSC 175: Engineering Analysis IV; and APSC 175: Statics; and APSC 175: Dynamics; and APSC 175: Fluids; and APSC 175: Thermodynamics; and APSC 175: Materials Science and Engineering; and APSC 175: Electrical Engineering; and APSC 175: Mechanical Engineering; and APSC 175: Mining Engineering. Admission to a selected program is dependent on performance in first year.

Bachelor of Applied Science Program > Years 1 & 2

First Year
Students admitted into the Engineering program directly from secondary school will take the first-year Engineering One curriculum. Other students will need to contact Engineering Advising for advice on their first-year program. Students seeking to enter the UBC Vantage College Engineering Program at the UBC Okanagan campus in Civil Engineering, Electrical Engineering, Mining Engineering, or Engineering Technology will need to take the alternative UBC Vantage program in one of the following programs: Biomedical Engineering, Chemical and Biological Engineering; Civil Engineering, Computer Engineering, Electrical Engineering, Engineering Physics, Geological Engineering, Integrated Engineering, Materials Engineering, Mechanical Engineering, or Mining Engineering. Admission to a selected program is dependent on performance in first year.

APSC 169 Fundamentals of Sustainable Engineering Design 3
APSC 171 Engineering Drawing and CAD/CAM 3
APSC 172 Engineering Analysis I 3
APSC 173 Engineering Analysis II 3
APSC 174 Engineering Analysis III 3
APSC 175 Engineering Analysis IV 3
APSC 176 Engineering Communication 3
APSC 177 Engineering Computation and Instrumentation 3
APSC 178 Electricity, Magnetism, and Waves 4
APSC 179 Linear Algebra for Engineers 3
APSC 180 Statics 3
APSC 181 Dynamics 3

© 2018 The University of British Columbia | Okanagan
Information in this Calendar is subject to change. Visit calendar.ubc.ca/okanagan for current details.
This document was generated on 13 Jul 2018 at 1:06 PM.
### 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.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 303</td>
<td>Engineering Project Management</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 305</td>
<td>Engineering Economic Analysis</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 306</td>
<td>Civil Engineering Materials</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 320</td>
<td>Reinforced Concrete Design I</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 321</td>
<td>Optimization and Decision Analysis for Civil Engineering</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 331</td>
<td>Infrastructure Management I</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 332</td>
<td>Surveying and GIS Analysis</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 335</td>
<td>Transportation Engineering</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 340</td>
<td>Soil Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 341</td>
<td>Engineering Hydrology</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 342</td>
<td>Open-Channel Flow</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 347</td>
<td>Environmental Engineering</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Total Credits</strong></td>
<td><strong>36</strong></td>
</tr>
</tbody>
</table>

**Design Electives**

- To be chosen from a list of Civil Engineering design elective courses provided by the School of Engineering.

### 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.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 303</td>
<td>Engineering Project Management</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 305</td>
<td>Engineering Economic Analysis</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 315</td>
<td>Systems and Control</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 320</td>
<td>Electromechanical Devices</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 321</td>
<td>Linear Circuit Theory</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 350</td>
<td>Microwave Devices</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 353</td>
<td>Semiconductor Devices</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 358</td>
<td>Microcomputer Engineering</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 360</td>
<td>Engineering Probability and Statistics</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 361</td>
<td>Signals and Communication Systems</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 362</td>
<td>Digital Signal Processing I</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 365</td>
<td>Engineering Electromagnetics</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Total Credits</strong></td>
<td><strong>36</strong></td>
</tr>
</tbody>
</table>
Mechatronics Option

Available to Mechanical and Electrical students, the Mechatronics Option allows students interested in 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). Application 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 Mechanical Engineering requires the following:

- Required 4th year courses (as listed above) and Elective requirements:
  - 12 credits of Design Electives & 12 credits of Technical Electives from a list of approved Mechatronics Option courses provided by the School of Engineering.

Bachelor of Applied Science Program > Mechanical Engineering

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

Bachelor of Applied Science Program > Minor in Computer Science

Application to the Minor in Computer Science is 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 31st. Admission will be competitive based on GPA. For an application to be considered, the student must be eligible for the Minor in Computer Science.

- Required 4th year courses (as listed above) and Elective requirements:
  - 12 credits of Design Electives & 12 credits of Technical Electives from a list of approved Mechatronics Option courses provided by the School of Engineering.

Bachelor of Applied Science Program > Minor in Management

For an application to be considered, the student must be eligible for the Minor in Management. Upon successful completion of the Minor program, the notation “Minor in Management” will be placed on the student’s transcript.

- Required 4th year courses (as listed above) and Elective requirements:
  - 12 credits of Design Electives & 12 credits of Technical Electives from a list of approved Mechatronics Option courses provided by the School of Engineering.

Bachelor of Applied Science Program > Minor in Management

For an application to be considered, the student must be eligible for the Minor in Management. Upon successful completion of the Minor program, the notation “Minor in Management” will be placed on the student’s transcript.

- Required 4th year courses (as listed above) and Elective requirements:
  - 12 credits of Design Electives & 12 credits of Technical Electives from a list of approved Mechatronics Option courses provided by the School of Engineering.
The Engineering Co-operative Education program is intended to provide motivated and qualified students with paid, faculty-monitored work experience that is directly related to their academic programs. The Engineering Co-op program is an optional, year-round program that normally requires completion of five work terms, including one Winter and one Fall placement. The program requires an additional year to complete the B.A.Sc. requirements.


The objective of the program is to meet the need to educate engineers with a unique combination of leadership and strong technical knowledge. This program is a unique encounter with a variety of stakeholders and the ability to engage in a high level of leadership. Students completing the program are qualified to develop a multi-disciplinary knowledge applicable to the resource engineering sector. Relevant professional experience is considered a significant asset and should be normally a minimum of 3 years. Students who do not meet the admissions minima, but who have had sufficient formal training and relevant professional experience to offset the academic shortfalls, are not precluded from considering admission. The completion of the program requires a minimum of 36 credits, 18 of which must be from the School of Engineering. Admission to the program involves a formal submission of an application. The application must include a statement of interest, resume, and two letters of recommendation. The program is governed by the general graduate guidelines of the College of Graduate Studies and the specific requirements of the School of Engineering.

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

Student Information

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=18,285,981,1164), and the Doctor of Philosophy (Ph.D.) (http://www.calendar.ubc.ca/okanagan/index.cfm?tree=14,341,0,0#15360) programs can be found under the College of Graduate Studies. Last updated: July 11, 2018

Professional Associations

The right to practice engineering and academic 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 consult the College of Engineers of Ontario regarding eligibility.

Academic Staff

2018/19 Okanagan Calendar

School of Engineering

© 2018 The University of British Columbia | Okanagan

Information in this Calendar is subject to change. Visit www.calendar.ubc.ca/okanagan for current details.

This document was generated on 13 Jul 2018 at 1:06 PM.