School of Engineering

Introduction

Bachelor of Applied Science Program
  - Admission Requirements
  - Academic Advising
  - Academic Regulations
  - Degree Requirements
  - Years 1 & 2
  - Civil Engineering
  - Electrical Engineering
  - Manufacturing 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

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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 [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 [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 that are normally completed in first year that will not have been met and that must be completed prior to graduation. Please consult here for details on Vantage College programs and here for details on Okanagan Engineering programs.

Elective courses in Engineering include:
- APSC 176: Engineering Communication (3 credits)
- APSC 177: First Year Seminar - APSC 179: Engineering Drawing and CAD/CAM (3 credits)
- APSC 210: Technical Communication (3 credits)
- APSC 217: Engineering Communication (3 credits)
- APSC 218: Linear Algebra for Engineers (3 credits)
- APSC 219: Statics (3 credits)
- APSC 221: Engineering Computation and Instrumentation (3 credits)
- APSC 273: Engineering Analysis II (3 credits)
- APSC 276: Engineering Communication (3 credits)
- APSC 278: Electricity, Magnetism, and Waves (3 credits)
- APSC 279: Linear Algebra for Engineers (3 credits)
- APSC 280: Statics (3 credits)
- APSC 281: Dynamics (3 credits)
- APSC 372: Engineering Analysis I (3 credits)
- APSC 374: Engineering Essentials (3 credits)
- APSC 377: Engineering Computation and Instrumentation (3 credits)
- APSC 378: Engineering Communication (3 credits)
- APSC 379: Linear Algebra for Engineers (3 credits)
- APSC 380: Statics (3 credits)
- APSC 381: Dynamics (3 credits)

Students taking courses from more than one year 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’s Office. This request must be supported by a statement signed by a medical practitioner.

The required courses and electives for the Bachelor of Applied Science degree are as follows:

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 are 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 that are normally completed in first year that will not have been met and that must be completed prior to graduation. Please consult here for details on Vantage College programs and here for details on Okanagan Engineering programs.


Bachelor of Applied Science Program > Academic Regulations

Bachelor of Applied Science Program > Academic 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 > Degree with Distinction

To be considered full time, students must carry a credit load in the Winter Session equal to at least 80% of the standard credit load for the year and program 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 in determining eligibility for financial assistance. Check with Student Services and Financial Support for more information.

Bachelor of Applied Science Program > Admission

Eligible programs include: Okanagan Campus: Electrical, Mechanical and Civil Engineering. Vancouver Campus: Biomedical, Chemical and Biological Engineering, Computer, Electrical, Environmental, Geodetic, Hydrologic, and Materials, and Mechanical Engineering.

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 a 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 to at least 80% of the standard credit load for the year and program 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 in determining eligibility for financial assistance. Check with Student Services and Financial Support for more information.

Bachelor of Applied Science Program > Academic 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

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 are 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 that are normally completed in first year that will not have been met and that must be completed prior to graduation. Please consult here for details on Vantage College programs and here for details on Okanagan Engineering programs.
## 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</th>
<th>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 305</td>
<td>Civil Engineering Materials</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 307</td>
<td>Reinforced Concrete Design I</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 330</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>
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</tr>
<tr>
<td>ENGR 340</td>
<td>Soil Mechanics</td>
<td>3</td>
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<tr>
<td>ENGR 341</td>
<td>Engineering Hydrology</td>
<td>3</td>
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<tr>
<td>ENGR 342</td>
<td>Open-Channel Flow</td>
<td>3</td>
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<tr>
<td>ENGR 347</td>
<td>Environmental Engineering</td>
<td>3</td>
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<tr>
<td>ENGR 413</td>
<td>Law and Ethics for Engineers</td>
<td>3</td>
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<tr>
<td>ENGR 440</td>
<td>Foundation Engineering</td>
<td>3</td>
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<tr>
<td>ENGR 447</td>
<td>Design of Processes for Water and Wastewater Treatment</td>
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<tr>
<td>ENGR 449</td>
<td>Engineering Capstone Design Project</td>
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</table>

### Total Credits: 36

### Design Electives

- ENGR 363 Engineering Project Management
- ENGR 365 Engineering Economic Analysis
- ENGR 315 Systems and Control
- ENGR 320 Electromechanical Devices
- ENGR 350 Linear Circuit Theory
- ENGR 351 Microelectronics
- ENGR 353 Semiconductor Devices
- ENGR 359 Microcomputer Engineering
- ENGR 360 Engineering Probability and Statistics
- ENGR 361 Signals and Communication Systems
- ENGR 362 Digital Signal Processing I
- ENGR 365 Engineering Electromagnetics

Total Credits: 36

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*Criteria must be met and include completion of 37 credits of first year UBC Okanagan Campus Applied Science. The admission process is competitive, with limited seats available.*
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:

1. APSC 169
2. APSC 171
3. APSC 172
4. APSC 173
5. APSC 177
6. APSC 180
7. APSC 181
8. APSC 182
9. APSC 183

Total Credits: 37

After completing the above courses, students must select an additional 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 > Manufacturing Engineering

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

<table>
<thead>
<tr>
<th>Course</th>
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<td>APSC 169</td>
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<td>APSC 182</td>
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<tr>
<td>APSC 183</td>
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<td>Total Credits:</td>
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<td>APSC 247</td>
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<tr>
<td>APSC 252</td>
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<td>APSC 253</td>
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<td>APSC 254</td>
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<tr>
<td>APSC 255</td>
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<tr>
<td>APSC 259</td>
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<tr>
<td>APSC 360</td>
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</tr>
<tr>
<td>COSC 210</td>
<td>3</td>
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<tr>
<td>MANF 230</td>
<td>3</td>
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<td>MANF 270</td>
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<td>Total Credits:</td>
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<table>
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<td>ENGR 310</td>
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<td>ENGR 377</td>
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<td>ENGR 410</td>
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<tr>
<td>ENGR 416</td>
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<tr>
<td>COSC 310</td>
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<td>MANF 330</td>
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<tr>
<td>MANF 368</td>
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<tr>
<td>MANF 370</td>
<td>3</td>
</tr>
<tr>
<td>MANF 386</td>
<td>3</td>
</tr>
</tbody>
</table>
In the third year and fourth years, students will follow a program in Civil Engineering, Electrical Engineering, or Mechanical Engineering.

Contact Information
School of Engineering
EME 402 – 7177 Alumni Ave
Kelowna, BC Canada
(250)-807-8723
Engineering.okanagan@ubc.ca

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>
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<tr>
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<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 310</td>
<td>Fluid Mechanics II</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>
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<td>ENGR 375</td>
<td>Energy System Design</td>
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<tr>
<td>ENGR 420</td>
<td>Materials Science II</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 437</td>
<td>Manufacturing Processes</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 430</td>
<td>Design of Machine Elements</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 431</td>
<td>Kinematics and Dynamics of Machinery</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 435</td>
<td>Heat Transfer Applications</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 437</td>
<td>Vibration of Mechanical Systems</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 36

- Technical Electives

Bachelor of Applied Science Program > Minor in Computer Science

Applications for admission must be made through the Engineering Advising Office by May 31. Admission will be competitive based on GPA and enrolment in this option is limited.

Bachelor of Applied Science Program > Minor in Management

Students desiring a stronger foundation in management and/or entrepreneurship are encouraged to consider the Minor in Management. Applications for admission must be made to 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 requirements does not guarantee admission into 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.

Page 8 of 10
Bachelor of Applied Science Program > Pre-Med Alternative Path (P-MAP)

The Bachelor of Applied Science Program is intended to provide motivated and qualified students with an academic foundation and experience that is directly related to their academic interests. The Engineering Co-op program is an optional, year-round program that normally requires completion of the work term, including one Winter and one Fall placement. This program requires an additional year to complete the B.A.Sc. requirements. Faculty advisors or students interested in engineering at their places of work and provide advice on the technical requirements of the program. Students applying for admission to the P-MAP program are required to have completed a minimum of 17 credits (47.5% of the required work term is officially recognized (i.e., noted on the transcript) by the institution where the work term originated; and

1. the program in which the work term was undertaken is accredited;

2. the program has the approval of the School of Engineering;

3. the program is offered by a recognized institution as part of an engineering degree;

4. the work term is completed within the advertised time frame.

Program Details:

- **Core Courses:**
  - CHEM 103
  - MATH 120
  - MATH 121
  - MATH 122
  - CHEM 111
  - PHYS 121

- **Elective Courses:**
  - Students must complete at least 3 credits from the following:
    - CHEM 104
    - MATH 127
    - PHYS 122
    - PHYS 123
- **Work Experience:**
  - Students must complete a minimum of 3 work terms.

Bachelor of Applied Science Program > Co-operative Education Program

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 interests. The Engineering Co-op program is an optional, year-round program that normally requires completion of the work term, including one Winter and one Fall placement. This program requires an additional year to complete the B.A.Sc. requirements. Faculty advisors or students interested in engineering at their places of work and provide advice on the technical requirements of the program. Students applying for admission to the P-MAP program are required to have completed a minimum of 17 credits (47.5% of the required work term is officially recognized (i.e., noted on the transcript) by the institution where the work term originated; and

1. the program in which the work term was undertaken is accredited;

2. the program has the approval of the School of Engineering;

3. the program is offered by a recognized institution as part of an engineering degree;

4. the work term is completed within the advertised time frame.

Program Details:

- **Core Courses:**
  - CHEM 103
  - MATH 120
  - MATH 121
  - MATH 122
  - CHEM 111
  - PHYS 121

- **Elective Courses:**
  - Students must complete at least 3 credits from the following:
    - CHEM 104
    - MATH 127
    - PHYS 122
    - PHYS 123
- **Work Experience:**
  - Students must complete a minimum of 3 work terms.