School of Engineering

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A School within the Faculty of Applied Science

Associate Dean and Director's Offices
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Mina Hoorfar, Director
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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. The School also offers a Bachelor of Applied Science (B.A.Sc.) degree in Manufacturing Engineering. 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 program is common to all Engineering disciplines and lays the foundation for Engineering specializations in subsequent years. It 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 year one, students have the option of continuing at the UBC Okanagan campus in the second year of the integrated program or transferring to the UBC Vancouver campus. Students who elect to transfer compete for program spaces with students at the UBC Vancouver campus and limited seats are available.

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.
Due to limited resources, the School has been authorized to restrict enrolment in year 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%.

**Transition from UBC Vantage College**

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. To be considered for readmission after that year. Students who fail a second time will be required to withdraw. In a failed year, students will be restricted. Application for readmission from non-current students should be directed to Enrolment Services. Field Trips Students who are required to participate in field trips will be responsible for expenses incurred during such trips.

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 Session credits). Students who do not complete their coursework in the full program may be admitted to the second year of the Engineering program. Field Trips Students who are required to participate in field trips will be responsible for expenses incurred during such trips.

Bachelor of Applied Science Program > Degree Requirements

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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.**

| APSC 177 | Engineering Computation and Instrumentation | 3 |
| APSC 178 | Electricity, Magneton, and Waves | 4 |
| APSC 179 | Linear Algebra for Engineers | 3 |
| APSC 180 | Statics | 3 |
| APSC 181 | Dynamics | 3 |
| APSC 182 | Matter and Energy I | 3 |
| APSC 183 | Matter and Energy II | 3 |

Total Credits: 37

*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. Second Year*

| APSC 201 | Technical Communication | 3 |
| APSC 246 | System Dynamics | 3 |
| APSC 248 | Engineering Analysis III | 3 |
| APSC 252 | Thermodynamics | 3 |
| APSC 254 | Instrumentation and Data Analysis | 3 |
| APSC 256 | Numerical Methods for Analysis | 3 |
| APSC 258 | Applications of Engineering Design | 3 |
| APSC 259 | Materials Science I | 3 |
| APSC 260 | Mechanics of Materials I | 3 |

**Bachelor of Applied Science Program > Civil Engineering**

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

| ENGR 303 | Engineering Project Management | 3 |
| ENGR 305 | Engineering Economic Analysis | 3 |
| ENGR 325 | Civil Engineering Materials | 3 |
| ENGR 327 | Reinforced Concrete Design | 3 |
| ENGR 330 | Optimization and Decision Analysis for Civil Engineering | 3 |
| ENGR 331 | Infrastructure Management | 3 |
| ENGR 332 | Surveying and GIS Analysis | 3 |
| ENGR 335 | Transportation Engineering | 3 |
| ENGR 340 | Soil Mechanics | 3 |
| ENGR 341 | Engineering Hydrology | 3 |
| ENGR 342 | Open Channel Flow | 3 |
| ENGR 347 | Environmental Engineering | 3 |

Total Credits: 36

**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.

| ENGR 303 | Engineering Project Management | 3 |

**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.

| ENGR 303 | Engineering Project Management | 3 |
### Bachelor of Applied Science Program & 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 sought-after careers in the exceptionally demanding and evolving domain of advanced design and manufacturing.

**Program Requirements**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>APSC 201</td>
<td>Technical Communication</td>
<td>3</td>
</tr>
<tr>
<td>APSC 246</td>
<td>System Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>APSC 248</td>
<td>Engineering Analysis III</td>
<td>3</td>
</tr>
<tr>
<td>APSC 252</td>
<td>Thermodynamics</td>
<td>3</td>
</tr>
<tr>
<td>APSC 253</td>
<td>Fluid Mechanics I</td>
<td>3</td>
</tr>
<tr>
<td>APSC 254</td>
<td>Instrumentation and Data Analysis</td>
<td>3</td>
</tr>
<tr>
<td>APSC 255</td>
<td>Electric Circuits and Power</td>
<td>3</td>
</tr>
<tr>
<td>APSC 259</td>
<td>Materials Science II</td>
<td>3</td>
</tr>
<tr>
<td>APSC 260</td>
<td>Mechanics of Materials I</td>
<td>3</td>
</tr>
<tr>
<td>COSC 210</td>
<td>Software Construction</td>
<td>4</td>
</tr>
<tr>
<td>MANF 232</td>
<td>Manufacturing Engineering Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>MANF 270</td>
<td>Production Systems Management</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Credits:** 38

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Note: It is the student's responsibility to ensure that the electives chosen meet the program graduation requirements for design and technical electives. The option consists of typical year one to three, followed by a set of prescribed fourth-year courses with one additional required course (APSC 401) beyond the Bachelor of Applied Science degree. Students may encounter difficulties fitting these courses into their schedule. Careful planning is essential and completion of the Option may require a summer session or an additional term of study beyond that required to complete the Bachelor of Applied Science degree alone. Entry into and continuation in the Option require that the student remain in Good Standing. Upon successful completion of the option, the notation “Mechatronics Option” will be added to the student's transcript. 

Available to Mechanical and Electrical engineering students, the Mechatronics Option allows students interested in mechatronics systems integrated with advanced electronics, sensors, actuators, and related systems to have a course set that emphasizes advanced technical competencies in the discipline. Entry into and continuation in the Option requires that the student remain in Good Standing. Upon successful completion of the option, the notation “Mechatronics Option” will be added to the student's transcript. Mechatronics Option students are required to complete an approved Mechatronics Option course each semester. Application for admission must be submitted to the Engineering Advising Office by May 31st. Admission to this option is based on GPA. Admission will be competitive, and admission will be based on the student's transcript.

### Biomedical Option

**Program Overview**

Application to the Biomedical Option is open to students specializing in Mechanical or Electrical Engineering. Students may encounter difficulties fitting these two Computer Science (COSC) courses into their schedule. Careful planning is essential and completion of the Option may require a summer session or an 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 remain in Good Standing.** Upon successful completion of the option, the notation “Biomedical Option” will be added to the student's transcript. 

Available to Mechanical and Electrical engineering students, the Biomedical Option allows students interested in biomedical engineering to have courses focused in these areas. Application to the Biomedical Option is open to students in year 2 and above of the Bachelor of Applied Science program specializing in Mechanical or Electrical Engineering. Applications for admission must be submitted to the Engineering Advising Office by May 31st. Admission to this option is based on GPA. Admission will be competitive, and admission will be based on the student's transcript.

### Engineering Electives

- **Required 4th year courses (as listed above) and:***
  - APSC 193 Anatomy and Physiology for Engineers
  - APSC 499 Engineering Capstone Project – Biomedical Project

Note: It is the student's responsibility to ensure that the electives chosen meet the program graduation requirements for design and technical electives. The option consists of typical year one to three, followed by a set of prescribed fourth-year courses with two additional required Computer Science courses beyond the Bachelor of Applied Science degree. Students may encounter difficulties fitting these courses into their schedule. Careful planning is essential and completion of the Option may require a summer session or an additional term of study beyond that required to complete the Bachelor of Applied Science degree alone.

**Entry into and continuation in the Option require that the student remain in Good Standing.** Upon successful completion of the option, the notation “Biomedical Option” will be added to the student's transcript. Biomedical Option students are required to complete an approved Biomedical Option course each semester. Application for admission must be submitted to the Engineering Advising Office by May 31st. Admission to this option is based on GPA. Admission will be competitive, and admission will be based on the student's transcript.
Third Year Manufacturing Engineering  
Credits

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 305</td>
<td>Engineering Economic Analysis</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 376</td>
<td>Materials Science II</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 377</td>
<td>Manufacturing Processes</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 381</td>
<td>Kinematics and Dynamics of Machinery</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 385</td>
<td>Heat Transfer Applications</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 416</td>
<td>Advanced Manufacturing CAD/CAM/CAE</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 476</td>
<td>Mechanics of Materials II</td>
<td>3</td>
</tr>
<tr>
<td>COSC 310</td>
<td>Software Engineering</td>
<td>3</td>
</tr>
<tr>
<td>MANF 330</td>
<td>Manufacturing Engineering Project I</td>
<td>6</td>
</tr>
<tr>
<td>MANF 348</td>
<td>Engineering Measurements and Instrumentation</td>
<td>3</td>
</tr>
<tr>
<td>MANF 370</td>
<td>Production Systems Management II</td>
<td>3</td>
</tr>
<tr>
<td>MANF 384</td>
<td>Industrial Automation</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 39

Fourth Year Manufacturing Engineering  
Credits

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 413</td>
<td>Law and Ethics for Engineers</td>
<td>3</td>
</tr>
<tr>
<td>MANF 430</td>
<td>Manufacturing Capstone Design Project</td>
<td>6</td>
</tr>
<tr>
<td>MANF 455</td>
<td>Life Cycle Analysis and Sustainability</td>
<td>3</td>
</tr>
<tr>
<td>MANF 455</td>
<td>Factory Planning</td>
<td>3</td>
</tr>
<tr>
<td>MANF 485</td>
<td>Supply Chain Tactics and Strategies</td>
<td>3</td>
</tr>
<tr>
<td>MANF 486</td>
<td>Digital Enterprise</td>
<td>3</td>
</tr>
<tr>
<td>MANF 470</td>
<td>Production Systems Management III</td>
<td>3</td>
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<tr>
<td>Technical Electives¹</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Humanities/Social Sciences Elective²</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits: 36

¹ To be chosen from a list of Manufacturing Engineering elective courses provided by the School of Engineering.
² To be chosen from a list of technical elective courses provided by the School of Engineering. Up to two third- or fourth-year courses offered outside the School of Engineering may qualify as technical electives with permission from the Mechanical Program Coordinator.

Contact Information

School of Engineering  
EME 4242 – 1137 Alumni Ave  
Kelowna, BC Canada  
(250)-807-8723  
Engineering.osteering@ubc.ca

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.

ENGR 303 Engineering Project Management  
ENGR 305 Engineering Economic Analysis  
ENGR 310 Fluid Mechanics II  
ENGR 315 Systems and Control  
ENGR 320 Electromechanical Devices  
ENGR 376 Materials Science II  
ENGR 377 Manufacturing Processes  
ENGR 380 Design of Machine Elements  
ENGR 381 Kinematics and Dynamics of Machinery  
ENGR 385 Heat Transfer Applications  
ENGR 387 Vibration of Mechanical Systems  

Total Credits: 36

ENGR 413 Law and Ethics for Engineers  
ENGR 476 Mechanics of Materials II  
ENGR 499 Engineering Capstone Design Project  

Total Credits: 36

Biomedical Option  
Available to Mechanical and Electrical students, the Biomedical Option allows students interested in biomedical engineering to have courses focused in these areas.

Application to the Biomedical Option is open to students in year 2 and above in the Bachelor of Applied Science program specializing in Mechanical or Electrical Engineering. Applications for admission must be submitted to the Engineering Advising Office by May 31st. Enrolment in this option is limited and admission will be competitive based on GPA.

The Biomedical Option under Mechanical Engineering requires the following courses:

- APSC 193 Anatomy and Physiology for Engineers
- ENGR 351 Microelectronics I
- ENGR 381 Kinematics and Dynamics of Machinery
- ENGR 385 Heat Transfer Applications
- ENGR 387 Vibration of Mechanical Systems
- ENGR 396 Engineering Capstone Design Project

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Programs. The Pillar contains the relevant technical material and is equivalent to a specialization.

Requirements

If you have demonstrated academic deficiencies, the Program Director, the Chair of the School of Engineering, or the Associate Director of Graduate Studies in the School of Engineering, may recommend admission on the basis of undergraduate and graduate coursework, work experience, and other relevant evidence. Definitions of academic deficiencies are given under "Assessment of Students" in the M.E.L. program of the Faculty of Graduate Studies. Students who have completed the first year of the Bachelor of Applied Science program and are seeking admission to the Master of Engineering Leadership in Resource Engineering Management (M.E.L. in R.E.M.) program will be considered for transfer to the M.E.L. in R.E.M. program. Students who are not currently enrolled in the University of British Columbia may apply under the "non-UBC category".

Admission to the M.E.L. in R.E.M. program is assumed to have been granted on the basis of the following: (1) an appreciation of the resource engineering sector, (2) the capability to contribute knowledge to the resource engineering sector, and (3) the availability of an acceptable academic and professional record.

The following requirements must be met by applicants who are not currently enrolled in the University of British Columbia:

- A four-year Bachelor’s degree with a minimum overall GPA of 3.5 on a 4.0 scale and a minimum of 30 credits in courses that are directly related to their academic program.

- Minimum English language requirements for the M.E.L. program include a TOEFL score of 580 (PBT) or 213 (CET) or 79 (IBT) (higher than the College of Graduate Studies minima), or an IELTS minimum overall band of 6.5 (with nothing less than 6.0 per individual test).

- A graduate record in the achievements of a qualified student in a related area, with a minimum GPA of B+ (76%).

- A minimum of 12 months of full-time work experience in the resource engineering sector, or completion of an M.E.L. in R.E.M. program approved by the program director of the School of Engineering.

- Other associated professional accreditations.

- Completion of the required work term package, including one Winter and one Fall placement. The program requires an additional year to complete the B.A.Sc. requirements.

- The program in which the work term was undertaken is accredited.

- The program in which the work term was undertaken is approved.

- The work term is officially recognized (i.e., noted on the transcript) by the institution where the work term originated.

- The program term gained experience in the same or similar discipline in which they are transferring.

- 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.

- Students may encounter difficulty fitting these courses into their schedule. Careful planning is essential and completion of the Minor program will likely require an additional term beyond that required to complete the Bachelor of Applied Science degree alone.

- Entry into and continuation in the M.E.L. program requires that the student remains in Good Standing.

- 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 normally recommended by many medical schools for students to be considered for admission. Different medical schools have different course requirements. Students are strongly advised to verify the course requirements with prospective medical schools. It should also be noted that the placement of the course in the student's required coursework is at the discretion of the institution and may result in the student's inability to obtain the necessary coursework.

- The ten P-MAP courses are integrated into the existing three engineering programs, and are taken in parallel with engineering courses.

- Entry into the M.E.L. program will not require full-time work placement. However, a prior work experience requirement is required for each work term. Work experiences must be related to or directly connected with the resource engineering sector.

- Applications for admission must be made to the Engineering Advising Office by May 31. Admission will be competitive based on GPA and enrrolment in this option. The School of Engineering makes recommendations to the College of Graduate Studies for admission to the M.E.L. in R.E.M. program.

- Students who are not currently enrolled in the University of British Columbia may apply under the "non-UBC category".

- Additional information is available on the School of Engineering's website.

- Admission to the M.E.L. in R.E.M. program requires that the student remains in Good Standing. Upon successful completion of the option, the notation "Biomedical Option" will be added to the student's transcript.

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

Information on the Master of Applied Science (M.A.Sc.) program is available at webcalendar.ubc.ca/okanagan/ programs. The Masters of Engineering (M.Eng.) and Master of Philosophy (M.Phil.) programs can be found under the College of Graduate Studies.
Information in this Calendar is subject to change. Visit www.calendar.ubc.ca/okanagan for current details.

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