12. FACULTY OF ENGINEERING AND APPLIED SCIENCE

12.1 General Information

12.1.1 Inquiries

General inquiries can be directed to:

Faculty of Engineering and Applied Science Office
Room 409, Education Building
University of Regina
Regina SK S4S 0A2
Tel: 306-585-4734
Email: engg@uregina.ca
Website: www.uregina.ca/engg/

Faculty and Staff:

www.uregina.ca/engineering/faculty-staff/index.html

12.1.2 Undergraduate Programs

The Faculty of Engineering and Applied Science offers Bachelor of Applied Science (BASc) degrees in engineering.

12.1.3 Systems Engineering

All of the programs in this group have in common the "systems approach" to engineering education. Although each program has some unique implementation of the systems theme, a common underlying objective is to produce engineering graduates with not only a strong base of technical knowledge but also the breadth of non-technical skills that a successful professional engineer should have in the workplace.

This breadth of skills includes economic, social, environmental, administrative and professional awareness. These are interdisciplinary skills that emphasize the interrelationships with people, workplace, environment, and the broader implication of engineering technology for society at large and for the surrounding technical and natural environment. When combined with the Co-operative work-study format (see §12.9), this "systems approach" provides engineering graduates with a high level of maturity and adaptability. The breadth skills comprise approximately 20% of the academic program.

On the technical level, "systems" engineering concentrates on the technical design of the whole, as distinct from the parts. In addition to being specialists in the various components of technology, systems engineers understand how these components are interrelated and interconnected. They can do the engineering design and analysis necessary to produce a total working system. For example, a landfill is not just an earthmoving project but also affects transportation and traffic, plus water, air and soil contamination. Technical and scientific skills comprise 80% of the academic program.

The Faculty of Engineering and Applied Science pioneered systems engineering and Co-operative education in Western Canada and continues to be a leader and innovator in engineering education.

12.1.4 Accreditation

The Canadian Engineering Accreditation Board has accredited programs in Electronic Systems, Industrial Systems, Environmental Systems, Petroleum Systems and Software Systems Engineering. This accreditation ensures that the graduates of these programs meet the standards necessary for registration as Professional Engineers in Canada.

12.1.6 Engineering Societies

Engineering students are encouraged to become members of the undergraduate Engineering Student Society, and also to become student members of the Institute of Electrical and Electronic Engineers, Canadian Society for Civil Engineering, the Institute of Industrial Engineers, the Society of Automotive Engineers, the Environmental Systems Engineering Students Society, and the Society of Petroleum Engineers.

12.2 Admission, Re-Admission, and Transfer

Students admitted, re-admitted or transferred into the Faculty must meet program requirements as indicated in the most current undergraduate calendar in effect at the time of the admission, re-admission or transfer (subject to further program changes). See §2, Admissions.

12.2.1 Special Admissions Provisions

Applicants who have completed diplomas at a technical institution will be admitted as long as they have a minimum average of 70%.

Students who have been required to discontinue permanently from an engineering program at another institution will not normally be accepted. A student who has been required to discontinue temporarily will be accepted when the term of the discontinuance has expired, but will be given a low priority.

12.2.2 U OF R TRANSFERS TO ENGINEERING

Students transferring into Engineering from other University of Regina faculties must have minimum undergraduate GPA of 60% and must have completed all high school requirements. Alternatively, applicants may apply for transfer by completing the following three University of Regina classes: MATH 110, CHEM 104, and PHYS 109. To meet the transfer requirements, a minimum grade of 60% in each of the courses is required in addition to a minimum UGPA of 60% on all post-secondary courses. See also §2.4.2 for details and additional requirements.

12.3 RESIDENCY AND TRANSFER CREDIT

A maximum of 20 courses (60 hours) of transfer credit from a Canadian University may be applied to a Bachelor of Applied Science program providing a minimum grade of 60% has been achieved.

A maximum of 10 courses (30 hours) of transfer credit from a Canadian Technical Institute may be applied to a Bachelor of Applied Science program providing a minimum grade of 70% has been achieved.

Courses are evaluated on a course-by-course basis. Students may be requested to provide the Faculty with comprehensive course information including course notes, assignments, labs, midterms, final exams, etc.

12.3.1 ADVANCED STANDING FROM POST-SECONDARY INSTITUTIONS

The following regulations for advanced standing from Postsecondary Institutions have been approved:

Students who wish to get credit for courses taken at other institutions may be requested to provide the Faculty with the following information:

- Calendar description and detailed course outline including the textbook used for the course; and/or
- Sample labs, assignments, and tests.

Transfer credits from Canadian technical institutes will be limited to a total of 10 courses at the University of Regina. A maximum of 3 out of these 10 courses will be at the 300- or higher level; the remaining 7 or more courses will be at the 100- and 200-level. Transfer credit will be awarded for only 1 course, at the introductory level, from each of the following areas: biology, chemistry, geology, mathematics, and physics. Transfer credit for 300- and higher level courses will be awarded only if the course content, the teaching environment, and the instructors' qualifications clearly show that that a University of Regina equivalency exists. In some cases, a combination of several courses taken at a Canadian technical institute may be equivalent to one course at the University of Regina. Each course from a Canadian technical institute that is used for transfer credit must have a minimum grade of 70%: no exceptions will be made to this rule.

Transfer credits from other Canadian universities will be limited to a total of 20 courses at the University of Regina. Each course from a Canadian university that is used for transfer credit must have a minimum grade of 60%: no exceptions will be made to this rule.

Transfer credits from foreign universities will be limited to a total of 15 courses at the University of Regina. Each course from a foreign university that is used for transfer credit must have a minimum grade of 60% or University of Regina equivalent: no exceptions will be made to this rule.

Notwithstanding the maximum number of transfer credits allowed, all students from other postsecondary institutions transferring to the University of Regina with advanced standing must take enough courses at the University of Regina to satisfy the criteria for "Engineering Science (ES)" and "Engineering Design (ED)" as required by CEAB (Canadian Engineering Accreditation Board). All transfer students will be individually counseled to achieve this objective.

No transfer credit will be awarded for ENEL 400, ENEV 400, ENIN 400, ENPE 400, ENSE 400, ENGG 401, ENIN 413, ENEV 415, ENEL 417, ENPE 419, and ENSE 477. In addition, any program may have a list of other courses for which transfer credit will not normally be awarded.

Those transferring from another institution should note that students who have completed more than 63 credit hours are ineligible for the Co-operative Education Program (see §12.9).

Transfer credit awarded in the Faculty of Engineering and Applied Science may not apply if a student transfers to another faculty.

12.4 ACADEMIC ADVISING AND REGISTRATION

Academic advising is offered to all engineering students. Students may book an appointment online: www.uregina.ca/engineering/advising.

First semester engineering students are invited to attend a registration session at which time a timetable of assigned courses is provided. First year students who are unable to attend may register by email at engg.uregina.ca. Schedules are posted on the Faculty of Engineering website and outside the Faculty Office.

Engineering elective courses may not be offered every year and a scheduled elective may be cancelled because of low enrolment. There may at times be a change in the sequencing of some required courses, so students who plan to take a course outside the normal sequence should first consult the Faculty Office. Normal sequencing of courses is shown in §12.10.

12.4.1 COURSE LOAD

The normal course load for Engineering students in all academic study semesters, including Spring/Summer session, is 15 credit hours.

12.5 EVALUATION OF ACADEMIC PERFORMANCE

In addition to the University Regulations in §5.13, the following Faculty regulations apply to all students registered in the Faculty of Engineering and Applied Science. See §5.9.3 for descriptions of the different kinds of GPA referred to in this section.

12.5.1 DEAN'S HONOURS LIST

In order to be eligible for inclusion on the Dean's Honour List, Engineering students must obtain a TGPA of 85% on at least 12 credit hours of numerically graded courses. Refer to §5.12.2.

12.5.2 PROBATION AND DISCONTINUANCE

University regulations governing academic performance apply to Engineering students (see §5.12).

12.5.2.1 Faculty Regulations

The Faculty of Engineering and Applied Science evaluates academic performance each semester.

Starting from the completion of first full-time semester (with at least nine credit hours), students are expected to maintain a PGPA of at least 60%. Those whose PGPA falls below 60% will be placed on faculty probation (faculty probation does not appear on official transcripts). Their next academic semester will be considered to be a probationary semester, during which they may take any courses for which they have the prerequisites, and must achieve a TGPA of at least 60%. Students who do not achieve the 60% TGPA and who still have a PGPA of less than 60% are required to discontinue (Faculty RTD) for at least 2 semesters from the Faculty of Engineering and Applied Science.

Students on faculty probation who achieve the 60% TGPA but who still have a PGPA of less than 60% will remain on faculty probation. Students will be reviewed at the end of their next academic semester subject to the faculty probation conditions outlined above. Students will be permitted two continuations of their probationary semesters to increase their PGPA to the required minimum of 60%. Failure to achieve this minimum in three probationary semesters will result in a required to discontinue for at least two semesters from the Faculty.

Students may also be required to discontinue from the Faculty at any time for unacceptable professional conduct. Refer also to §5.1,3 Discipline.

Notification of a requirement to discontinue will be issued no later than one week after the start of lectures and students who are required to discontinue studies will have their registration in academic courses cancelled immediately.

Students must repeat all required courses in which they have a grade of less than 50% (failed course).

When calculating a student's average, the Faculty will use the last grade obtained for all repeated courses (see §5.11).

If an IN is not completed by the end of the following semester, an NP will be assigned.

Averages are calculated to 2 decimal points. The calculation is not rounded but is truncated to 2 decimal points.

These decisions can be appealed to the Faculty's Student Appeals Committee. Refer to §12.8 for procedures.

12.5.2.2 Re-Admission and Transfer following an RTD

Students who have been required to discontinue under the Faculty regulations may petition for re-admission after they have discontinued studies for the required period, or may petition for transfer to another faculty (see §2.7).

12.6 Time Limits and Graduation Requirements

Upon completion of all program requirements, students are required to submit an application for graduation to the Engineering General Office.

Completion of Classes	Deadline for Application	Approval by Executive Council	Convocation Ceremony
December	November 30	February	Spring
April	January 31	May	Spring
Spring/Summer session	July 31	September	Fall

University regulations and deadlines governing graduation and convocation ceremonies apply to Engineering students. See §6, Graduation.

Students must complete the BASc degree within ten years of starting in the Faculty. Students transferring into the Faculty of Engineering and Applied Science and who have been given transfer credits may have this time reduced depending on the transfer credits that have been given. Students with exceptional circumstances may request the approval of the Faculty for an extension.

Double majors are permitted if a student meets the course requirements of each program. Students must consult the Associate Dean (Academic) for approval.

A PGPA of 60% is required for graduation.

A PGPA of 80% is required for graduation with distinction.

A PGPA of 85% is required for graduation with great distinction.

Successful completion of four work terms is required for graduation with Co-op designation.

Successful completion of the 12 or 16 month internship is required for graduation with Internship designation.

12.7 Other Faculty Regulations

12.7.1 Repeating Courses

Refer also to §5.11. Students are permitted to repeat a maximum of 15 credit hours of courses in which they obtained a grade of 50% or higher.

Students may be required to discontinue from the Faculty for a period of eight months (two semesters) if a course is failed more than once with the exception of ENGL 100. See §5.12.6.6.

12.7.2 Calculator Use in Examinations

Engineering students are required to obtain an approved calculator available for sale at the UR Bookstore. Bookstore staff will put an engineering sticker on the approved calculator.Only this calculator will be permitted for use in examinations.

12.7.3 Prequisite Waiver Procedure

All students are required to satisfy the prerequisite and corequisite course requirements before registering in a subsequent course. In a very limited number of special cases, a course instructor may waive such requirements; however, all prerequisite waivers must also be approved by the Program Chairs. Students must read eligibility criteria for prerequisite waivers before completing the prerequisite waiver form, which is available on the Faculty's website.

12.8 Faculty Appeals Procedures

Students have the right to appeal any academic action, including probation and discontinuance (University or Faculty).

Appeals must be made in writing within two weeks of notification of the academic action, and are to include an explanation of extenuating circumstances. Supporting documents (for example, a medical certificate) must accompany the appeal. Appeals are to be addressed to:

Faculty of Engineering and Applied Science
Student Appeals Committee
ED 409
University of Regina
Regina, SK S4S 0A2

The Faculty of Engineering and Applied Science Student Appeals Committee comprises appointed faculty, one from each program area. The Associate Dean (Academic), the Faculty Administrator, Manager of Academic Advising and the Director of Co-op sit on the committee as ex officio members. By appointment, students are permitted to present their case in person to the Committee. Students are notified in writing of the outcome of their appeal.

12.9 Co-operative Education Programs

In conjunction with the University's Co-operative Education Program, the Faculty of Engineering and Applied Science operates a program in Co-operative engineering education in which students take university courses and obtain engineering-oriented work experience in industry or business. This is made possible by fully using 3 four-month semesters per year.

Experience has shown that putting classroom theory into practice early in students' university life tends to improve motivation and academic performance. As well, the practical experience aids in choosing the area of studies best suited to students' talents. Being employed during a mix of work/study semesters will help students who require financial assistance, but such employment is not assured by acceptance into the Co-operative Education Program.

Refer to §8.1.1 for general regulations governing University of Regina Co-operative Education Programs.

12.9.1 SEQUENCING

Work terms and study semesters are sequenced over a total period of four years and eight months as shown below. There are four required work terms and nine study semesters (see below and §12.10.)

Fall	Winter	Spring	Fall	Winter	Spring	Fall
1	2		3	Work term or 4	4 or Work term	5
Winter	**Spring**	**Fall**	**Winter**	**Spring**	**Fall**	**Winter**
Work term	6	Work term	7	Work term	8	9

Normally, students must complete the first work term before study semester 5, the second before study semester 6, the third before study semester 7, and the fourth before study semester 8.

12.9.2 ACADEMIC RULES

Students registered in a BASc program in Systems Engineering in the Faculty of Engineering and Applied Science (except for those explicitly excluded, such as by an exchange agreement) may participate in the Co-operative Education program, under the direction of the Director, Co-op Work Study Programs, who is responsible for admitting, withdrawing, and monitoring the progress of students through the program according to the following regulations. Appeals may be made to the Faculty of Engineering and Applied Science Student Appeals Committee.

12.9.2.1 Admission

To apply for admission to the Co-operative Education program in the

Faculty of Engineering, a student must:

1. be registered in at least twelve credit hours in a Systems Engineering program in the Faculty of Engineering;
2. have completed or been given credit for no less than 27 and no more than 63 credit hours towards the Systems Engineering degree (students are expected to have successfully completed the first three Semesters of the Systems Engineering program before going on a first work term);
3. have a PGPA of at least 60.0%; and
4. have completed or been given credit for ENGG 123 and ENGG 100.

Acceptance into the Co-operative Education program will be shown on the student's transcript. Students will remain in the Co-operative Education program until completion of the program requirements and convocation, or withdrawal. Upon graduation there will be an appropriate designation on the diploma and transcript of each student who successfully completes the four work terms required for Co-operative Education designation.

12.9.2.2 Progress

Students will register for four work terms, designated ENGG 051 through ENGG 054, which are graded on a pass/fail basis. At the end of each work term, students must submit a work term report to the Faculty of Engineering, which will be evaluated. Employers will provide an informal evaluation of student performance during the job-site visit (normally midway through the work term) and a formal evaluation at the end of the work term. A "Pass" grade requires both an acceptable work term report and an acceptable employer evaluation.

If the content of the work term report is deemed to be confidential or proprietary, the employer may request to evaluate the report in-house. The request should be in the form of a signed letter from an engineering supervisor, addressed to the Director, Co-op Work Study Programs, on company letterhead with the supervisor's position/title clearly stated and including an explanation of the necessity for a confidential report. Permission should be requested one month before the end of the work term. However, the ENGG 051 work term report cannot be confidential, and the student is permitted only two confidential reports in total.

Students must maintain a PGPA and TGPA (in the most recent semester completed) of at least 60% in order to be eligible for a work term.

Students who are placed on academic probation by the Faculty of Engineering and Applied Science or the University of Regina will not be eligible for a work term until the probation is lifted.

Students who are required to discontinue (RTD) from the Faculty of Engineering and Applied Science and/or the University of Regina (MW) will be withdrawn from the Co-operative Education program and from the work term (if placed).

Students who wish to change the sequencing of their academic/work semesters (e.g., double work term) must consult Director, Co-op Work Study Programs for approval.

12.9.2.3 Withdrawal

Students who are admitted into the Co-operative Education program are expected to remain in the program. However, under special circumstances, a student may withdraw from the program voluntarily or be withdrawn by the Director, Co-op Work Study Programs. Students who withdraw or are required to withdraw will normally not be re-admitted to the Co-operative Education program.

- (voluntary) Under special circumstances, a student who has completed one work term may request withdrawal from the program. Such requests must be made, in writing and with supporting documentation, to the Director, Co-op Work Study Programs.
- (voluntary) Under exceptional circumstances, a student who has completed two or three work terms may request withdrawal from the program. Such requests must be made, in writing and with supporting documentation, to the Dean of the Faculty of Engineering, after consultation with the Director, Co-op Work Study Programs and the Co-op Office.
- Students who receive an "F" grade for a work term will be required to withdraw from the Co-operative Education program.
- Students who behave in an unprofessional manner during the placement process or the work placement will be required to withdraw from the Co-operative Education program.
- Students who complete more than 63 credit hours towards the Systems Engineering degree without obtaining a work placement are no longer eligible for the Co-operative Education program, and will be withdrawn.
- Students who are required to discontinue from the Faculty of Engineering and Applied Science (RTD) and/or the University of Regina (MW) will be withdrawn from the Co-operative Education program. If, at a later date, the student is re-admitted to the Faculty of Engineering and Applied Science, the student may apply for re-admission to the Co-operative Education program.

12.9.3 CO-OPERATIVE EDUCATION INTERNSHIP PROGRAM

In conjunction with the University of Regina Co-operative Education Program, the Faculty of Engineering and Applied Science offers a Co-operative Education Internship program for students enrolled in the Bachelor of Applied Science in Systems Engineering. This program is administered by the Director, Co-op Work/Study Programs, who is responsible for academic rules proposed in §12.9.2. The Co-operative Internship Program also involves individual members of the Faculty of Engineering and Applied Science, who mentor students during the internship placement.

Co-operative Internship is a single 12- or 16-month placement immediately preceding the two final academic semesters. Students who successfully complete the requirements of the program will receive "Internship" designation on their degree. Students who participate in Co-operative Education are not eligible for internship.

The objectives of the Co-operative Internship program are to enhance Engineering education by:

- Exposing students to the application of engineering science and engineering design methods in the workplace;
- Confirming academic theory through direct and indirect application in a workplace environment;
- Enhancing the student's analytical and communication skills through active participation in the application of engineering in the workplace.
- Enhance the University of Regina's partnerships with industry and the engineering community by providing students of

varying skills, available for work placements of varying duration;
- Provide opportunities to Joint Undergraduate Degree Program, Canadian and International students;
- Provide internship opportunities in Saskatchewan, across Canada, and selected international placements.

Sequencing

The Co-operative Internship Program consists of a single, consecutive 12- or 16-month placement, normally taken between academic semesters 7 and 8, and followed by a minimum of 15 credit hours towards the Systems Engineering program.

Co-operative Internship for Industrial, Environmental, and Petroleum Systems Engineering

Fall	Winter	Spring	Fall	Winter	Spring	Fall
1	2		3	4	6	5

Winter	Spring	Fall	Winter	Spring	Fall	Winter
7	Intern-ship	Intern-ship	Intern-ship	Intern-ship	8	9

Co-operative Internship for Electronic and Software Systems Engineering

Fall	Winter	Spring	Fall	Winter	Spring	Fall
1	2		3	4		5
Winter	**Spring**	**Fall**	**Winter**	**Spring**	**Fall**	**Winter**
7	6	Intern-ship	Intern-ship	Intern-ship	8	9

Co-operative Internship for the Joint International Undergraduate Degree Program

Fall	Winter	Spring	Fall
5	7	6	Internship
Winter	**Spring**	**Fall**	**Winter**
Internship	Internship	8	9

Alternate sequencing to accommodate individual student programs is possible, and should be discussed with and approved by the Director, Co-op Work Study Programs.

Academic Rules

Admission

Applications to the Co-operative Internship program in the Faculty of Engineering and Applied Science are due six months before the intended placement, as listed in the Academic Calendar. To apply for admission, a student must:

- be registered in at least twelve credit hours in a Systems Engineering Program in the Faculty of Engineering;
- have completed or been given credit for no less than 72 and no more than 102 credit hours towards the Systems Engineering degree. Students are expected to have successfully completed academic Semesters 1, 2, 3, 4, 5, 6, and 7 of the Systems Engineering program before the internship placement;
- have a PGPA of at least 60%;
- have withdrawn from the Co-operative Education program, if previously admitted. Students who have completed more than 1 work term are not eligible for the Co-operative Internship program; and
- have demonstrated fluency, written and oral, in both English and the language of employment in their desired country of internship.

Acceptance into the Co-operative Internship program does not ensure work placement.

The diploma and transcript of each student who successfully completes the minimum of these consecutive internship semesters required for Co-operative Internship will include "Internship" designation.

For further information, please contact the Director of Co-op Work Study programs.

12.9.3.1 Progress

After admission to the Co-operative Internship program, students are expected to maintain a PGPA and TGPA of 60% prior to the placement. If the PGPA and/or TGPA falls below 60%, the student may be asked to continue academic studies for a further semester, or may be withdrawn from the Co-operative Internship program.

Students who are required to discontinue from the Faculty of Engineering and Applied Science and/or the University of Regina after admission to the Co-operative Internship program will be withdrawn from the internship (if placed), and the Co-operative Internship program.

Once the internship placement has been made (normally 2 months before the start of the internship semester), the student must:

- prepare an "Internship Study Plan", documenting his/her expectations for the internship period; and
- meet with potential Faculty mentors to discuss the academic aspects of the internship.

Students will register for 3 or 4 consecutive 4-month Co-operative Internship semesters, ENGG 071 through ENGG 074, which are graded on a pass/fail basis. The grade is assigned by the Director, Co-op Work Study Programs, based on the "intern Evaluation Report" submitted by the employer, and the Faculty mentor's evaluation of the "Internship Progress Report" and the "Internship Final Report" submitted by the student. The student must receive a "P" grade in all registered internship semesters in order to receive Internship designation.

The first two months of ENGG 071 are probationary. During this period, the student or employer may terminate the placement by mutual consent and with the agreement of the Faculty of Engineering and Applied Science and the Co-operative Education Office. After the first month of employment, the internship placement will be evaluated, and the student will either continue (with counseling as to any deficiencies which should be addressed in the coming month), or the internship will be terminated. If the deficiencies have not been adequately addressed by the end of the second month of employment, the student will be withdrawn from the placement.

Once the probationary period is completed, the employer and student will submit periodic Intern Evaluation Reports and Internship Progress Reports, respectively, as indicated in the table below.

A grade will be issued at the end of each internship semester. "P" will allow the student to continue. "F" will result in termination of the internship and removal from the Co-operative Internship program.

Report Sequence for 16-month Internship

Internship Semester	Month 1	Month 2	Month 3	Month 4
ENGG 071	Intern Evaluation Report + Internship Progress Report	Intern Evaluation Report + Internship Progress Report		Internship Progress Report
ENGG 072	Intern Evaluation Report	Internship Progress Report	Intern Evaluation Report	Internship Progress Report
ENGG 073	Intern Evaluation Report	Internship Progress Report	Intern Evaluation Report	Internship Progress Report
ENGG 074	Intern Evaluation Report	Internship Progress Report		Internship Final Report + Final Intern Evaluation Report

Report Sequence for 12-month Internship

Internship Semester	Month 1	Month 2	Month 3	Month 4
ENGG 071	Intern Evaluation Report + Internship Progress Report	Intern Evaluation Report + Internship Progress Report		Internship Progress Report
ENGG 072	Intern Evaluation Report	Internship Progress Report	Intern Evaluation Report	Internship Progress Report
ENGG 073	Intern Evaluation Report	Internship Progress Report		Internship Final Report + Final Intern Evaluation Report

At the end of the final internship semester, the student must submit a comprehensive analytical report dealing with the work accomplished and the goals achieved, referring to the Internship Study Plan.

If the analytical content of the final report is deemed to be confidential or proprietary, the employer should contact the Director, Co-op Work Study Programs one month before the end of the final internship semester to discuss alternative methods of evaluation.

12.9.3.2 Withdrawal

Students who are admitted into the Co-operative Internship program are expected to complete the program; however, under special circumstances, a student may withdraw voluntarily or be withdrawn by the Director, Co-op Work Study Programs. Students who withdraw or are required to withdraw will normally not be re-admitted to the Co-operative Internship program.

Under exceptional circumstances, a student who has progressed beyond the 2-month probationary period may request withdrawal from the internship. Such requests must be made, in writing and with supporting documentation from the employer and any other relevant source, to the Dean of the Faculty of Engineering and Applied Science, after consultation with the Director, Co-op Work Study Programs and the Co-op Office.

Students who behave in an unprofessional manner during the placement process or the internship will be required to withdraw from the Co-operative Internship program. This includes, but is not limited to, §5.14 Non-Academic Misconduct.

Students who complete more than 120 credit hours towards the Systems Engineering degree without obtaining an internship placement are no longer eligible for the Co-operative Internship program.

Students who are required to discontinue from the Faculty of Engineering and Applied Science and/or the University of Regina after being admitted to the Co-operative Internship program will be withdrawn from the program.

Students whose employment is terminated for cause by their employer will receive a grade of "F" for the current internship, and be withdrawn from the Co-operative Internship program.

Appeals may be made to the Faculty of Engineering and Applied Science Student Appeals Committee.

12.10 Academic Programs

12.10.1 Length and Sequencing of Systems Engineering Programs

All Systems Engineering programs are 136 credit hours (46 courses) in length, including a common first year. Pursuing a double major or minor will increase the number of courses required.

Students are encouraged to consider the Co-operative Education Program (see §12.9).

12.10.1.1 Co-operative Education – All Programs:

Fall	Winter	Spring	Fall	Winter	Spring	Fall
1	2		3	Work term or 4	4 or Work term	5
Winter	**Spring**	**Fall**	**Winter**	**Spring**	**Fall**	**Winter**
Work term	6	Work term	7	Work term	8	9

Those who do not wish to take up this option, or who are not eligible to do so, may complete their academic program in 3 years and 8 months, as shown below:

12.10.1.2 Non-Co-op Electronic and Software Systems:

Fall	Winter	Spring	Fall	Winter	Spring
1	2		3	4	
Fall	**Winter**	**Spring**	**Fall**	**Winter**	
5	7	6	8	9	

12.10.1.3 Non-Co-op Industrial, Environmental, and Petroleum Systems:

Fall	Winter	Spring	Fall	Winter	Spring
1	2		3	4	6
Fall	**Winter**	**Spring**	**Fall**	**Winter**	
5	7		8	9	

Course requirements and sequencing are shown in the following sections.

12.10.2 Systems Engineering Majors

There are five majors in Engineering and Applied Science: Electronic Systems, Industrial Systems, Environmental Systems, Petroleum Systems, or Software Systems.

12.10.2.1 Selection of a Major

Application deadlines: December 1, April 1, and August 1

Eligibility: Students admitted to first year with a major of ENGE apply to the major of their choice with a minimum of 8 required courses in Year 1. Application forms are available from the Faculty's website. Acceptance priority is based on PGPA, number of credit hours completed and space in the desired program.

Current Faculty of Engineering and Applied Science students that wish to change their major may also submit an application form.

12.10.2.2 Double Majors

A double major is permitted, provided that students meet the course requirements for each program. Students must consult the Associate Dean (Academic) for approval.

12.10.2.3 Concurrent Programs

Normally, concurrent programs will not be available in the Faculty of Engineering. Students who are interested must consult the Associate Dean (Academic).

12.10.3 Bachelor of Applied Science in Electronic Systems Engineering (ESE)

Electronic Systems Engineering applies skills in electronics and computers to the design and operation of products or systems for handling information. Such systems include modern telecommunications, industrial controls and electronic consumer products.

Credit hours	BASc in Electronic Systems Engineering, required courses	Student's record of courses completed
	Semester 1 (Fall)	
3.0	CHEM 104	
3.0	ENGG 123	
3.0	MATH 122	
3.0	PHYS 109	
3.0	MATH 110	
	Semester 2 (Winter)	
3.0	CS 110	
3.0	ENGG 100	
3.0	ENGL 100	
3.0	MATH 111	
3.0	PHYS 119	
	Semester 3 (Fall)	
3.0	MATH 217	
3.0	CS 115	
3.0	ENEL 280	
3.0	ENEV 223	
3.0	ENGG 240	
	Semester 4 (Winter, Spring/Summer)	
3.0	CS 210	
3.0	ENEL 282	
3.0	ENEL 281	
3.0	MATH 213	
3.0	STAT 160	
	Semester 5 (Fall)	
3.0	ENSE 352	
3.0	ENEL 383	
3.0	ENEL 384	
3.0	BUS 260	
3.0	PHYS 201	
	Semester 6 (Spring/Summer)	
3.0	BUS Elective (BUS 210, 250, 285, or 302)	
3.0	ECON 201	
3.0	ENEL 380	
3.0	ENEL 390	
3.0	CS 215	
	Semester 7 (Winter)	
3.0	ENEL 387	
3.0	ENSE 350	
3.0	ENEL 371	
3.0	* Approved Elective	
3.0	* Approved Elective	
	Semester 8 (Fall)	
1.0	ENEL 400	
3.0	ENGG 303	
3.0	* Approved Elective	
3.0	* Approved Elective	
3.0	*Approved Elective	
3.0	*Approved Elective	
	Semester 9 (Winter)	
3.0	ENGG 401	
3.0	ENEL 417	
3.0	*Approved Elective	
3.0	*Approved Elective	
3.0	*Approved Elective	
136.0	**Total**	

*** Approved Electives.**

Choose electives from one of the following streams:

Communications: ENEL 393, ENEL 492 and 5 courses from the approved list below.

Micro-Electronics: ENEL 487, ENEL 489 and 5 courses from the approved list below.

Control Systems: ENEL 389, ENEL 484 and 5 courses from the approved list below.

Power: ENEL 472, ENEL 482 and 5 courses from the approved list below.

Approved List (includes Technical, Software, and Risk and Industrial Safety):

Technical Electives: ENEL 389, ENEL 393, ENEL 395, ENEL 472, ENEL 482, ENEL 484, ENEL 494, ENEL 487, ENEL 489, ENEL 492, ENEL 495, ENIN 253, ENEV 261

Software Electives (choose at most one): CS 330, CS 340, CS 350, CS 372, CS 375 or any ENSE class except ENSE 477

Risk and Industrial Safety Electives (choose at most one): ENEV 334, ENIN 433, ENIN 440, ENGG 411

Social Sciences and Humanities elective: choose any Faculty of Arts course.

Natural Science Elective (choose one): from astronomy, biology, chemistry, geology and physics.

12.10.4 Bachelor of Applied Science in Environmental Systems Engineering (EVSE)

Environmental Systems Engineering offers studies in the areas of water resource systems, regional infrastructures systems, waste management, and air pollution control.

Credit hours	BASc in Environmental Systems Engineering, required courses	Student's record of courses completed
	Semester 1 (Fall)	
3.0	CHEM 104	
3.0	ENGG 123	
3.0	MATH 122	
3.0	PHYS 109	
3.0	MATH 110	
	Semester 2 (Winter)	
3.0	CS 110	
3.0	ENGG 100	
3.0	ENGL 100	
3.0	MATH 111	
3.0	PHYS 119	
	Semester 3 (Fall)	
3.0	CHEM 140	
3.0	ENEV 223	
3.0	ENGG 240	
3.0	GEOL 102	
3.0	ENEV 372	
	Semester 4 (Winter, Spring/Summer)	
3.0	ECON 201	
3.0	Humanities Elective	
3.0	ENIN 241	
3.0	MATH 213	
3.0	STAT 160	
	Semester 5 (Fall)	

Credit hours	BASc in Environmental Systems Engineering, required courses	Student's record of courses completed
3.0	BIOL 223	
3.0	ENEV 261	
3.0	ENEV 321	
3.0	ENGG 330	
3.0	Approved Elective	
	Semester 6 (Spring/Summer)	
3.0	ENEV 281	
3.0	ENEV 334	
3.0	ENEV 384	
3.0	ENEV 480	
3.0	ENIN 253	
	Semester 7 (Winter)	
3.0	ENEV 360	
3.0	ENEV 421	
3.0	ENEV 440	
3.0	ENEV 462	
3.0	ENEV 422	
	Semester 8 (Fall)	
1.0	ENEV 400	
3.0	ENEV 435	
3.0	ENEV 363	
3.0	ENEV 383	
3.0	ENGG 303	
3.0	*Approved Elective	
	Semester 9 (Winter)	
3.0	ENEV 415	
3.0	ENEV 469	
3.0	ENGG 401	
3.0	*Approved Elective	
3.0	*Approved Elective	
136.0	**Total**	
*** Approved Electives (these electives may not be offered regularly):** **Choose at least three from the following:** ENEV 465, ENEV 475, ENEV 484, ENEV 463, ENEV 408, ENIN 350, ENIN 453, ENIN 455, ENPE 490 **Choose at most one from the following:** BUS 260, BUS 302, ENEL 280		
Social Sciences and Humanities elective: choose any Faculty of Arts course.		

12.10.5 Bachelor of Applied Science in Industrial Systems Engineering (ISE)

Industrial Systems Engineering is designed to develop engineers who can organize and effectively utilize the total resources of modern manufacturing and process industries. This includes the materials, machinery, facilities, people and capital.

Credit hours	BASc in Industrial Systems Engineering, required courses	Student's record of courses completed
	Semester 1 (Fall)	
3.0	CHEM 104	
3.0	ENGG 123	
3.0	MATH 122	
3.0	PHYS 109	
3.0	MATH 110	
	Semester 2 (Winter)	
3.0	CS 110	
3.0	ENGG 100	
3.0	ENGL 100	
3.0	MATH 111	
3.0	PHYS 119	
	Semester 3 (Fall)	
3.0	ENEL 280	
3.0	ENEV 223	
3.0	ENGG 240	
3.0	MATH 217	
3.0	*Natural Science Elective	
	Semester 4 (Winter, Spring/Summer)	
3.0	ENIN 233	
3.0	ENIN 241	
3.0	MATH 213	
3.0	STAT 160	
3.0	*Humanities Elective	
	Semester 5 (Fall)	
3.0	CHEM 140	
3.0	ENEV 261	
3.0	ENIN 331	
3.0	ENIN 343	
3.0	ENGG 330	
	Semester 6 (Spring/Summer)	
3.0	BUS 260	
3.0	ECON 201	
3.0	ENEL 380	
3.0	ENIN 253	
3.0	ENIN 350	
	Semester 7 (Winter)	
3.0	ENIN 355	
3.0	ENIN 430	
3.0	ENIN 440	
3.0	ENIN 453	
3.0	*Approved Elective	
	Semester 8 (Fall)	
1.0	ENIN 400	
3.0	BUS 250	
3.0	ENIN 340	
3.0	ENIN 444	
3.0	ENGG 303	
3.0	ENIN 349	
	Semester 9 (Winter)	
3.0	BUS 210, 285, 302	
3.0	ENGG 401	
3.0	ENIN 413	
3.0	ENIN 433	
3.0	*Approved Elective	
136.0	**Total**	
***Approved Electives:** **Choose two:** ENGG 411, ENEL 389, ENEL 484, ENIN370, ENIN 445, ENIN 448, ENIN 455, ENIN 456, offered as follows: ENIN 370: Winter semester ENIN 445 and ENIN 456: Winter semester in even-numbered years ENIN 448 and ENIN 455: Winter semester in odd-numbered years.		
Social Sciences and Humanities elective: choose any Faculty of Arts course.		
Natural Science Elective (choose one): astronomy, biology, chemistry, geology, and physics.		

12.10.6 Bachelor of Applied Science in Petroleum Systems Engineering (PSE)

Petroleum Systems Engineering evaluates, designs and manages technologies in evaluating reserves, surface collection and treatment facilities for oil and gas. Advanced computer utilization and automation combined with effective communications skills are integrated within the program. Techniques developed for the recovery of petroleum can be applied to the extraction of other important minerals. Petroleum

System Engineers also contribute to activities such as pollution remediation and greenhouse gases control.

Credit hours	BASc in Petroleum Systems Engineering, required courses	Student's record of courses completed
	Semester 1 (Fall)	
3.0	CHEM 104	
3.0	ENGG 123	
3.0	MATH 122	
3.0	PHYS 109	
3.0	MATH 110	
	Semester 2 (Winter)	
3.0	CS 110	
3.0	ENGG 100	
3.0	ENGL 100	
3.0	MATH 111	
3.0	PHYS 119	
	Semester 3 (Fall)	
3.0	ENGG 240	
3.0	ENEL 280	
3.0	ENPE 241	
3.0	GEOL 102	
3.0	MATH 217	
	Semester 4 (Winter, Spring/Summer)	
3.0	ECON 201	
3.0	ENIN 233	
3.0	ENPE 251	
3.0	MATH 213	
3.0	STAT 160	
	Semester 5 (Fall)	
3.0	CHEM 140	
3.0	ENGG 303	
3.0	ENEV 261	
3.0	ENPE 300	
3.0	ENPE 360	
	Semester 6 (Spring/Summer)	
3.0	BUS 260	
3.0	ENIN 253	
3.0	ENGG 330	
3.0	ENEV 223	
3.0	ENIN 350	
	Semester 7 (Winter)	
3.0	ENIN 355	
3.0	ENPE 302	
3.0	ENPE 370	
3.0	GEOL 270	
3.0	*Humanities Elective	
	Semester 8 (Fall)	
1.0	ENPE 400	
3.0	ENPE 410	
3.0	ENPE 440	
3.0	ENPE 450	
3.0	*Approved Elective	
3.0	*Approved Elective	
	Semester 9 (Winter)	
3.0	ENGG 401	
3.0	ENPE 419	
3.0	ENPE 486	
3.0	* Approved Elective	
3.0	*Approved Elective	
136.0	**Total**	
***Approved Electives:** **Minimum of two from:** ENIN 433, ENIN 453, ENIN 456, ENEV 422, ENPE 380, ENPE 430, ENPE 470, ENPE 475, ENPE 481, ENPE 490		
Social Sciences and Humanities elective: choose any Faculty of Arts course.		

12.10.7 Bachelor of Applied Science in Software Systems Engineering (SSE)

Software Systems Engineering is designed to develop engineers skilled in the professional construction and engineering of software systems and their life cycles. Such systems include World Wide Web transaction systems, management and information systems and interactive multimedia systems.

Credit hours	BASc in Software Systems Engineering, required courses	Student's record of courses completed
	Semester 1 (Fall)	
3.0	CHEM 104	
3.0	ENGG 123	
3.0	MATH 122	
3.0	PHYS 109	
3.0	MATH 110	
	Semester 2 (Winter)	
3.0	CS 110	
3.0	ENGG 100	
3.0	ENGL 100	
3.0	MATH 111	
3.0	PHYS 119	
	Semester 3 (Fall)	
3.0	ENEV 223	
3.0	CS 115	
3.0	ENEL 280	
3.0	MATH 217	
3.0	ENGG 240	
	Semester 4 (Winter, Spring/Summer)	
3.0	CS 210	
3.0	ENEL 282	
3.0	ENEL 281	
3.0	MATH 213	
3.0	STAT 160	
	Semester 5 (Fall)	
3.0	CS 215	
3.0	CS 340	
3.0	ENSE 374	
3.0	ENSE 352	
3.0	ENEL 384	
	Semester 6 (Spring/Summer)	
3.0	BUS 260	
3.0	Approved Elective	
3.0	ECON 201	
3.0	ENEL 380	
3.0	ENSE 353	
	Semester 7 (Winter)	
3.0	ENSE 475	
3.0	ENEL 387	

Credit hours	BASc in Software Systems Engineering, required courses	Student's record of courses completed
3.0	ENSE 470	
3.0	Approved Elective	
3.0	ENSE 471	
	Semester 8 (Fall)	
1.0	ENSE 400	
3.0	ENGG 303	
3.0	ENSE 472	
3.0	Approved Elective	
3.0	Approved Elective	
3.0	Approved Elective	
	Semester 9 (Winter)	
3.0	ENGG 401	
3.0	Approved Elective	
3.0	ENSE 350	
3.0	ENSE 477	
3.0	*Approved Elective	
136.0	**Total**	
Technical Electives (4 in total are required that include a minimum of 2 ENSE): ENSE 473, ENSE 479, ENSE 480, ENSE 481, ENSE 482, ENSE 483, CS 325, CS 327, CS 315, CS 330, CS 350, CS 375, CS 405, CS 425, ENEL 487, ENEL 489 or any other approved technical elective.		
Social Sciences and Humanities elective (one is required): choose any Faculty of Arts course.		
Natural Science Elective (one is required): from astronomy, biology, chemistry, geology, and physics.		
Open Elective (one is required)		

12.10.8 Engineering Minors for Systems Engineering Programs

Inclusion of a minor in a Systems Engineering program is optional, but provides students with the opportunity to broaden their knowledge in areas other than their major discipline. Students must consult their Program Chair for approval. Available minors are listed below.

12.10.8.1 Electronics Engineering Minors

Credit hours	Communications stream Engineering minor, required courses	Student's record of courses completed
3.0	ENEL 390	
3.0	ENEL 393	
3.0	ENEL 494	
3.0	Any 2 approved ENEL Courses	
3.0		
15.0	**Total**	

Credit hours	Micro-electronics stream Engineering minor, required courses	Student's record of courses completed
3.0	ENEL 387	
3.0	ENEL 487	
3.0	ENEL 489	
3.0	Any 2 approved ENEL courses	
3.0		
15.0	**Total**	

Credit hours	Intrumentation and Control stream Engineering minor, required courses	Student's record of courses completed
3.0	ENEL 380	
3.0	ENEL 389	
3.0	ENEL 484	
3.0	Any 2 approved ENEL courses	
3.0		
15.0	**Total**	

Credit hours	Power stream Engineering minor, required courses	Student's record of courses completed
3.0	ENEL 371	
3.0	ENEL 472	
3.0	ENEL 482	
3.0	Any 2 approved ENEL courses	
3.0		
15.0	**Total**	

12.10.8.2 Environmental Engineering Minor

Credit hours	Environmental Engineering minor, required courses	Student's record of courses completed
3.0	ENEV 321	
3.0	ENEV 421	
3.0	Three from ENEV 363, 372, 462, 465, 422, 462, 465	
3.0		
3.0		
15.0	**Total**	

12.10.8.3 Manufacturing Engineering Minor

Credit hours	Manufacturing Engineering minor, required courses	Student's record of courses completed
3.0	Five of: ENIN 349, ENIN 350, ENIN 445, ENIN 448, ENEL 389, ENEL 484	
3.0		
3.0		
3.0		
3.0		
15.0	**Total**	

12.10.8.4 Oil & Gas Engineering Minor

Credit hours	Oil & Gas Engineering minor, required courses	Student's record of courses completed
3.0	ENPE 241	
3.0	ENPE 251	
3.0	Three of: ENPE 300, ENPE 302, ENPE 370, ENPE 381, ENPE 410, ENPE 440, ENPE 450, ENPE 460, Including a minimum of one 400 level course	
3.0		
3.0		
15.0	**Total**	

12.10.8.5 Process Engineering Minor

Credit hours	Process Engineering minor, required courses	Student's record of courses completed
3.0	ENIN 350	
3.0	ENIN 355	
3.0	ENIN 455	
3.0	ENIN 456	
3.0	One of ENEV 363, ENEV 465, 440, ENPE 490, ENPE 370	
15.0	**Total**	

12.10.8.6 Software Engineering Minor

Credit hours	Software Engineering minor, required courses	Student's record of courses completed
3.0	ENES 374	
3.0	ENSE 470	
3.0	Any 2 from ENSE 350, 352, 353, 471, 472, 475	
3.0		
3.0	Any listed ENSE course excluding ENSE 400 & 477	
15.0	**Total**	

12.10.9 Minors for Systems Engineering Programs Optional Non-Engineering Minors

Students may complete up to two minors in total in a subject other than, and distinct from, their major. The minor is a concentration of at least six courses in a discipline from any of the Faculties of Science, Arts, Media, Art, and Performance, La Cité universitaire francophone, or Kinesiology and Health Studies. The applications to graduate with a minor are ultimately approved by the Faculty offering the student's first major. The specific courses required for a minor in a given discipline can be found under the relevant departmental listing. A minimum of four (4) courses from outside the major are required.