DEPARTMENT OF CIVIL, GEOLOGICAL, AND ENVIRONMENTAL ENGINEERING

UNIVERSITY OF SASKATCHEWAN

HANDBOOK FOR GRADUATE STUDENTS

Part 1: Academic Policies and Guidelines

2021-2022

Table of Contents

1. Introduction

Welcome to the Department of Civil, Geological and Environmental Engineering ("the Department") at the University of Saskatchewan ("U of S"). The Department offers the following Civil Engineering graduate programs:

- Doctor of Philosophy (Ph.D.)
- Master of Science (M.Sc.)
- Master of Engineering (M.Eng.)
- Postgraduate Diploma (P.G.D.)

Information pertaining to academic aspects of these programs is given in this manual.

For information pertaining to administrative aspects of these programs, please refer to:

> The Graduate Chair or the Graduate Assistant for the Civil Engineering graduate programs.

For more information on the Department, its faculty and areas of research, please refer to the following websites:

> http://grad.usask.ca/programs/civil-engineering.php#Program
> https://engineering.usask.ca/departments/cgee.php

2. About the College of Graduate and Postdoctoral Studies

Graduate programs at the University of Saskatchewan are administered by the College of Graduate and Postdoctoral Studies (CGPS). All graduate students should review and follow the policies and guidelines of CGPS, which can be accessed from the following website:

> https://cgps.usask.ca/policy-and-procedure/index.php

3. About the Graduate Chair and Graduate Assistant

For the most part, your interactions with CGPS will be managed through the Department of Civil, Geological and Environmental Engineering's Graduate Chair, and the Graduate Assistant assigned to Civil Engineering graduate programs by the College of Engineering. Aside from your supervisor, advisory committee members (if applicable) and course instructors, your most frequent point of contact will likely be the Graduate Assistant. The Graduate Assistant can be found in room 2B60 of the Engineering Building, and can be reached by email at:

> engrgrad.support@usask.ca

4. About this Manual

University-wide policies and guidelines for graduate studies are set by the CGPS. However, individual academic units may have policies that exceed the minimum standards established by CGPS, and procedures that are specified in greater detail than the general framework provided by CGPS.

This manual describes policies, guidelines and procedures that have been developed specifically for graduate programs in Civil Engineering. While the Department has worked to ensure that its policies, guidelines and procedures adhere to the standards of the College of Graduate and Postdoctoral Studies (CGPS) at the University of Saskatchewan, should the information in this handbook conflict with CGPS procedures, faculty, staff, and students should contact the Department's Graduate Chair to resolve the conflict.

5. About our Graduate Programs

Ph.D.

1. Entrance Requirements	Master's degree, or equivalent, from a recognized university in an academic discipline relevant to the proposed field of study; A cumulative weighted average of at least 70% (U of S grade system equivalent) in the last two years of study (e.g., 60 credit units); Proof of English language proficiency may be required for international applicants and for applicants whose first language is not English.
2. Course Requirements	6 credit units* of 800-level course work plus research (CE 996), seminar (CE 990), ethics and integrity training (GSR 960 for all students, GSR 961 if research involves human subjects, GSR 962 if research involves animal subjects), and safety training (see section 10).
3. Academic Standards	A standing of at least 70% in each class taken for credit towards Ph.D. Program.
4. Thesis Requirement	An independent study and investigation, a thesis written in good literary style, and defence of the thesis in an oral examination.
5. Other Requirements	Advisory Committee approval of research proposal; successful completion of qualifying (if applicable) and comprehensive examinations.
6. Time Limit	Time in program is measured from the beginning of the first term of registration for work which is included in the Program of Studies (this may be course work done at U of S or elsewhere, or thesis research), excluding any periods of approved leave. Ph.D. students are expected to complete their programs 36 to 48

	months, with a maximum program time limit of 72 months imposed by CGPS.
7. Fees	See the CGPS website for up-to-date information; http://grad.usask.ca/programs/civil-engineering.php#Tuitionandfunding
8. Financial Assistance	Several possible sources. See Appendix A for details.

***** The Advisory Committee of a Ph.D. student has the authority to require additional credit units of course work, if they deem this to be in the student's best interest.

M.Sc.

1. Entrance Requirements	A four-year honours degree, or equivalent, from a recognized college or university in an academic discipline relevant to the proposed field of study; A cumulative weighted average of at least 70% (U of S grade system equivalent) in the last two years of study (e.g., 60 credit units); Demonstrated ability for independent thought, advanced study, and research; Proof of English language proficiency may be required for international applicants and for applicants whose first language is not English.
2. Course Requirement	15 credit units* of course work. At least 12 credit units of the course work must be at the 800 level; at most 3 credit units may be taken at the senior undergraduate (300 or 400) level. Additional requirements include research (CE 994), seminar (CE 990), ethics and integrity training (GSR 960 for all students, GSR 961 if research involves human subjects, GSR 962 if research involves animal subjects), and safety training (see section 10).
3. Academic Standards	A standing of at least 60% in each graduate class, at least 70% in each senior undergraduate class (if applicable), and a cumulative overall average of at least 70%.
4. Thesis Requirement	An independent study and investigation, a thesis written in good literary style, and defence of the thesis in an oral examination.
5. Other Requirements	Advisory Committee approval of research proposal.
6. Time Limit	Time in program is measured from the beginning of the first term of registration for work which is included in the Program of Studies (this may be course work done at U of S or elsewhere, or thesis research), excluding any periods of approved leave. M.Sc. students are expected to complete their programs in

	approximately 24 months, with a maximum program time limit of 60 months imposed by CGPS.
7. Fees	See the CGPS website for up-to-date information; http://grad.usask.ca/programs/civil-engineering.php#Tuitionandfunding
8. Financial Assistance	Several possible sources. See Appendix A for details.
9. Transfer to Ph.D.	M.Sc. students wishing to transfer to a Ph.D. program must complete the Ph.D. qualifying examination between the first and second year of their M.Sc. program. If successful, additional course requirements (over and above those required for the M.Sc. program of studies) will be assessed by the Advisory Committee.

***** The Advisory Committee of a M.Sc. student has the authority to require additional credit units of course work, if they deem this to be in the student's best interest.

M.Eng.

1. Entrance Requirements	A four-year honours degree, or equivalent, from a recognized college or university in an academic discipline relevant to the proposed field of study; A cumulative weighted average of at least 70% (U of S grade system equivalent) in the last two years of study (e.g. 60 credit units); Demonstrated ability for independent thought, advanced study, and research; Proof of English language proficiency may be required for international applicants and for applicants whose first language is not English.
2. Course Requirement	30 credit units consisting of 24 credit units of course work and a project (CE 992) rated at 6 credit units. At least 18 credit units of the course work must be at the 800 level; at most 6 credit units may be taken at the senior undergraduate (300 or 400) level. Additional requirements include CE 990 (seminar), ethics and integrity training (GSR 960 for all students, GSR 961 if research involves human subjects, GSR 962 if research involves animal subjects), and safety training (see section 10).
3. Academic Standards	A standing of at least 60% in each graduate class, at least 70% in each senior undergraduate class (if applicable), and a cumulative overall average of at least 70%.
4. Project Requirement	An independent investigation and report on a topic related to the major field of study. This may be a design problem or special study related to engineering in government or industry.

5. Time Limit	Time in program is measured from the beginning of the first term of registration for work which is included in the Program of Studies (this may be course work done at U of S or elsewhere, or project research), excluding any periods of approved leave. M.Eng. students devoted full-time to their studies are expected to complete their programs 16 to 20 months, with a maximum program time limit of 60 months imposed by CGPS.
6. Fees	See the CGPS website for up-to-date information; http://grad.usask.ca/programs/civil-engineering.php#Tuitionandfunding
7. Financial Assistance	Funding is not typically offered to M.Eng. students.

P.G.D.

1. Entrance Requirements	A four-year honours degree, or equivalent, from a recognized college or university in an academic discipline relevant to the proposed field of study; A cumulative weighted average of at least a 65% (U of S grade system equivalent) in the last two years of study (e.g. 60 credit units); Proof of English proficiency may be required for international applicants and for applicants whose first language is not English.
2. Course Requirement	30 credit units of course work. At least 18 credit units of the course work must be at the 800 level; at most 12 credit units may be taken at the senior undergraduate (300 or 400) level. Additional requirements are ethics and integrity training (GSR 960 for all students, GSR 961 if research involves human subjects, GSR 962 if research involves animal subjects), and safety training (see section 10).
3. Academic Standards	A standing of at least 60% in each class, and a cumulative overall average of at least 65%.
4. Time Limit	Time in program is measured from the beginning of the first term of registration for course work which is included in the Program of Studies, excluding any periods of approved leave. P.G.D. students devoted full-time to their studies are expected to complete their programs 16 to 20 months, with a maximum program time limit of 60 months imposed by CGPS. P.G.D. students should be aware that few, if any suitable courses are available during the summer term.
5. Fees	See the CGPS website for up-to-date information; http://grad.usask.ca/programs/civil-engineering.php#Tuitionandfunding

6. Financial Assistance	Funding is not typically offered to P.G.D. students.
7. Transfer to Master's	A student in a P.G.D. program who has obtained an average of 70% or better and who would have been eligible for direct admission to a Master's program, may apply to have his/her course credits transferred to a Master's program. A student in a P.G.D. program who was not eligible for direct admission to a Master's program in the first instance, but who has completed at least 9 credit units of 800-level courses with an average of 70% or better and no grade below 60%, may qualify for transfer to a Master's program with the permission of the Graduate Chair and CGPS.

Additional Information about Master's and P.G.D. Programs

The M.Sc. and M.Eng. programs have the same admissions requirements and academic standards for course work. The M.Sc. program may be regarded as a research option, in which research and thesis constitute roughly one half of the program's academic requirement. The M.Eng. program may be regarded as the professional option. This option is for students or practicing engineers who wish to have advanced level training, but are not interested in research per se. In lieu of research, extra classes are taken to meet the credit unit requirements and a project report must be written. The P.G.D. is a program encouraged only when a student wishes to pursue Master's degree but did not achieve the entrance requirements. In this case a P.G.D. program, with the recommendation of a potential supervisor, can be pursued to allow the student to qualify for the M.Sc. or the M.Eng. programs.

6. Courses and Departmental Research Areas

For a list of courses, refer to the U of S online Course and Program Catalogue:

http://www.usask.ca/calendar/coursecat/

Please note, however, that not all course are offered every year. To view of list of courses being offered during an upcoming term, please consult the Class Search website:

http://pawnss.usask.ca/ban/bwckschd.p_disp_dyn_sched

Graduate classes in Civil Engineering are offered in five broad general areas, as follows:

- **Sanitary Engineering** deals mostly with water quality, sanitary engineering, pollution control, and water and wastewater treatment.

- **Geotechnical Engineering** deals with physico-chemical properties of soils, frozen soils, unsaturated and swelling soils, volume change and shear strength, stability, seepage, foundations

and retaining wall design. The **Geoenvironmental** area is a combination of Geotechnical and Environmental Engineering. It combines many of the basic concepts of soil mechanics and seepage with geo-chemistry, organic chemistry and contaminant transport. Most applications deal with waste management in the industrial and resource sectors.

- **Transportation Engineering** deals with topics in terrain evaluation, transportation systems, pavement management, geometric design, and traffic engineering.

- **Structures and Materials Engineering** deals with topics on structural analysis, dynamics of structures, theory of elasticity, theory of plates and shells, plastic design, structural steel design, advanced reinforced concrete, prestressed concrete and concrete technology.

- **Water Resources Engineering** includes hydraulic engineering, hydrology, water resources management, and climate change and adaptation. Hydraulic engineering includes river engineering, hydraulic structures, erosion and sediment transport, and open channel flow and relies heavily on knowledge of fluid mechanics. Hydrology includes and surface and statistical hydrology. Water resources management includes modelling of water resources systems,and the creation of decision-making tools for water resources development. Climate change and adaptation includes development of methods to estimate changes in future climate at the regional and local scale and the adaptation of water resources systems.

Although a student is expected to major in one specialty area, a graduate program need not be so restricted. For example, a student taking a program in one given topic area may take one or more classes in other topic area(s), and/or a limited number of classes offered in other academic units.

For Ph.D. and M.Sc. students, the Advisory Committee must approve the list of courses to be taken.

For M.Eng. and P.G.D. students, the Supervisor must approve the list of courses to be taken.

To obtain credit for CE 992, M.Eng. students must prepare a written report based on their assigned research project. The report will be reviewed by two faculty members (typically the supervisor and another faculty member with relevant expertise), and it must be assigned a passing grade (60% or greater) in order to be credited to the student's program. (CGPS Policy: Graduate courses for which students receive grades of 60-69% are minimally acceptable in a Master's program, provided the GPA is at least 70%)

7. CE 990 Seminar

All Ph.D., M.Sc. and M.Eng. students in the Department are required to enrol in CE 990 for the duration of their program. There are two components of CE 990:

(1) All Ph.D., M.Sc. and M.Eng. students are required to attend a series of seminars that will be delivered by various faculty members and staff. Topics covered include academic integrity, literature reviews, preparing technical presentations, research methods, writing research proposals, thesis writing, and safety.

(2) Participation in a seminar session in a format that mimics a technical conference. This graduate student seminar is run on an annual basis (typically near the end of January), and usually spans 1.5 to 2 days. M.Sc. students are required to give a presentation at this seminar at least once during the course of their program; Ph.D. students are required to present at least twice during the course of their program. All graduate students, whether presenting or not, are expected to attend the seminar.

8. The Supervisor – Student Relationship

Graduate students will normally have discussed and agreed to certain terms of engagement with their supervisor(s) prior to beginning their programs. Regardless, in order to promote a thorough understanding of one another's roles and responsibilities, students are expected to meet with their supervisor(s) early in their programs and complete the Graduate Student - Supervisor Agreement (given in Appendix B, and also available using the following URL):

https://students.usask.ca/documents/graduate/student-supervisor-agreement.pdf).

For thesis-based students (M.Sc., Ph.D.) who began their programs in September 2019 or later: Completion of the agreement is a program requirement. The agreement must be completed within the first twelve months of the students' program; early in the first term in program is highly recommended. When an agreement has been signed by the supervisor(s) and student, it should be submitted to the Graduate Administrator. The Graduate Administrator will keep a copy in the Department's files, and submit a copy to CGPS. Once CGPS has received the agreement, a CGPS college advisor will save a copy to the digital student file in the Banner document management system, and will mark the non-course requirement as complete in Banner. This action will then update the requirement as complete in the student's DegreeWorks record as well.

For non thesis-based students (M.Eng., P.G.D.): Completion of the agreement is recommended, though non-applicable elements of the agreement may be omitted by mutual consent (e.g., elements pertaining to funding and publications, which are generally not be applicable to M.Eng. or P.G.D. students). When an agreement has been signed by the supervisor and student, it should be submitted to the Graduate Administrator, who will keep a copy in the Department's files.

9. Advisory Committees and Program Timelines for Ph.D. and M.Sc. students

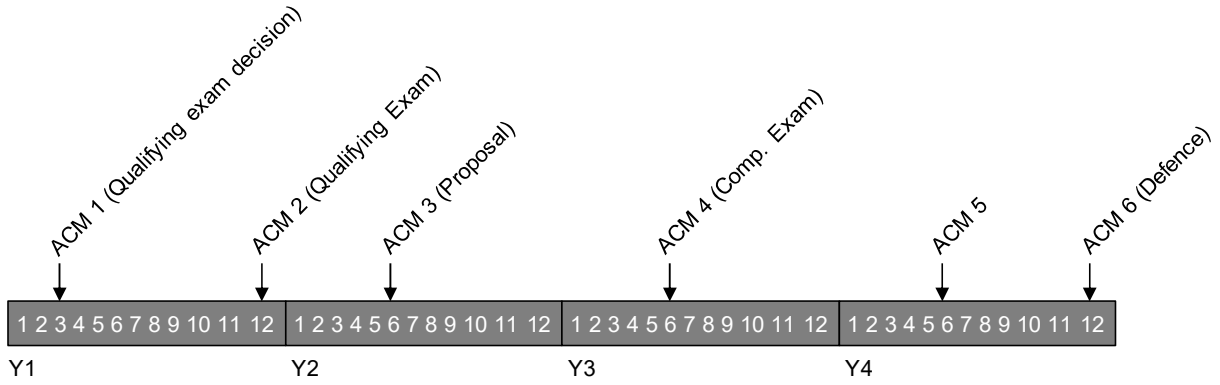
Ph.D. Advisory Committee

The supervisor(s) of a Ph.D. student shall form an Advisory Committee (AC) for the student upon program commencement. The AC shall consist of the supervisor(s) and three additional faculty members. At least one of the members (cognate) must be from an academic unit other than the Department of Civil, Geological and Environmental Engineering ("the Department"). The other two members are normally from the Department. The Graduate Chair assigns a chair for the AC, who is usually an additional non-voting member.

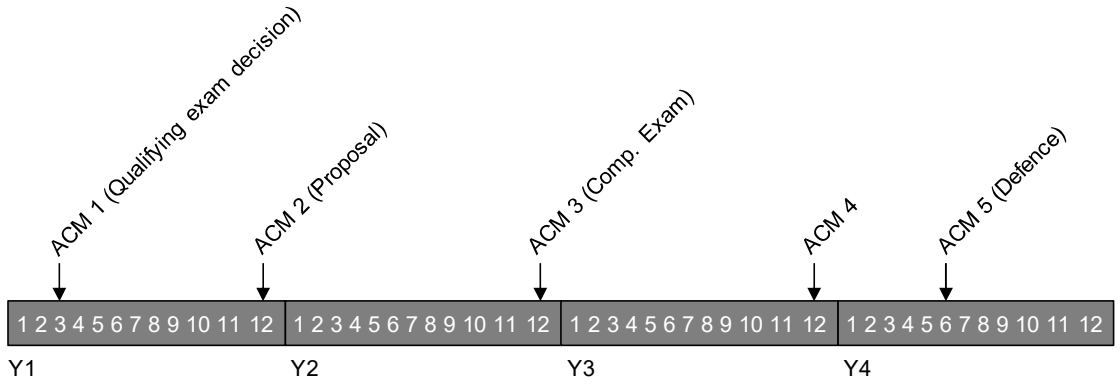
Timeline of the Ph.D. program

- AC meeting with the student during the **first academic term** to approve the Program of Studies, including the required courses;
- Qualifying examination should be completed within the **first 12 months** of the program;
- AC meeting to approve research proposal ("proposal defence") should occur within **18 months** from the start of the Program; and sooner if the qualifying examination is waived. The AC ensures that the scope of the research allows for program completion in a timely fashion;
- Comprehensive exam should be completed within **24-30 months** from the start of the program;
- Additional AC meetings, with a **maximum interval of 12 months between meetings**, as needed to monitor student progress; and
- Thesis defence within **36-48 months** from the start of the Ph.D. program.

Recommended timelines for the Ph.D. program are shown in Figure 9.1.



(a)



(b)

Figure 9.1: Recommended timelines for the Ph.D. program: (a) including the qualifying examination; and (b) for cases where the qualifying examination has been waived. "Y" denotes year in program, numbers denote months in each year, and "ACM" denotes advisory committee meeting.

The Advisory Committee (AC) of M.Sc. student

The supervisor(s) of a M.Sc. student shall form an Advisory Committee (AC) for the student upon program commencement. The M.Sc.'s AC consists of the supervisor(s) and two additional faculty members who are normally members of the Department. One of these members will additionally serve as chair for regular advisory committee meetings, unless the student, supervisor or any committee member specifically requests the addition of a chair to the committee. If no such request is made during the student's program, a chair will be assigned by the Graduate Chair for the M.Sc. defence.

Timeline of the M.Sc. program

- AC meeting with the student during the **first academic term** to approve the Program of Studies, including the required courses;
- AC meeting to approve research proposal ("proposal defence") should occur within the first **9 months** of the program. The AC ensures that the scope of the research allows for program completion in a timely fashion;
- Additional AC meetings, with a **maximum interval of 12 months between meetings**, as needed to monitor student progress; and
- Thesis defence within **24-28 months** from the start of the M.Sc. program.

A recommended timeline for the M.Sc. program is shown in Figure 9.2.

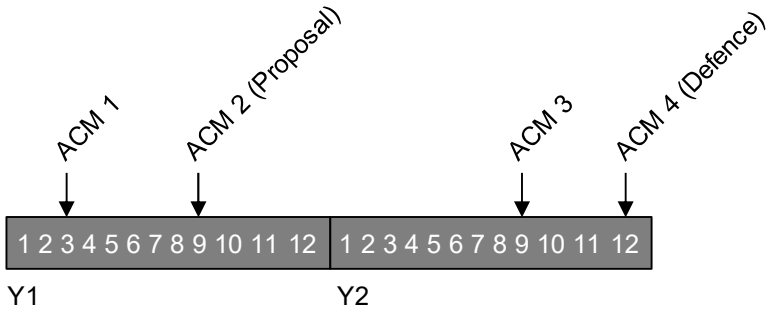


Figure 9.2: Recommended timeline for the M.Sc. program. "Y" denotes year in program, numbers denote months in each year, and "ACM" denotes advisory committee meeting.

10. Required Health and Safety Training

Graduate students in the Department are required by U of S and College of Engineering policy to take requisite occupational health and safety training provided through U of S Safety Resources. As well, all graduate students must participate in local worksite specific orientation training provided by the faculty and/or staff responsible for the laboratories and facilities to be used during their program of studies.

Regardless of the expected length of service or employment arrangements, all graduate students are expected to self-register and attend all requisite Safety Services courses as soon as the courses are available and it is reasonably possible to attend; typically within the first two months of service. ***There is no cost for this training, and time spent at the courses is considered time "at work" towards your program requirements.***

The College of Engineering's Researcher, Graduate Student and Worker Orientation Checklist is provided in Appendix C (and is available in your paws channel under MY COLLEGE). Further to laboratory-specific safety training, the Orientation Checklist identifies the following notable requirements:

- Laboratory Safety Course (half-day online course; required for all graduate students)
- Workplace Hazardous Material Information System (WHMIS) (half-day online course; required for all graduate students)
- COVID 19 (on-line course, required for all graduate students)
- Safety Orientation for Employees (half-day online course, required for all graduate students)
- Safety Orientation for Supervisors (half-day online course, required for all graduate students))

The Laboratory Safety Course and the WHMIS course are valid for three years. As such, students taking longer than three years to complete their programs will have to re-take these courses shortly before they expire.

The Orientation for Supervisors course is valid for seven years. As such, students taking longer than seven years to complete their programs will have to re-take these courses shortly before they expire.

Course descriptions and registration forms can be found using the Safety channel on PAWS:

Sign in - PAWS - University of Saskatchewan (usask.ca)

Students must submit certificates demonstrating successful completion of each course to their supervisor, the Graduate Assistant, and (if requested) to laboratory technical staff.

Students may not access U of S laboratories, nor may they serve as laboratory teaching assistants, until they have completed the required safety training. All key request forms must have a copy of the completed and fully authorized orientation checklist attached if laboratory space access is being requested.

11. Academic Integrity[1]

Guidelines for Academic Conduct at the U of S are approved by University Council. The U of S also hosts a website regarding academic and non-academic integrity:

https://library.usask.ca/academic-integrity

The key principle underlying these guidelines is the following: **Integrity is expected of all students in their academic work – class participation, examinations, assignments, research, practica - and in their non-academic interactions and activities as well.**

What academic integrity means for students is the following:

[1] This section was taken from the University of Saskatchewan's School of Environment and Sustainability Graduate Handbook 2016-16; used here with minor modifications.

- Perform your own work unless specifically instructed otherwise. Check with your instructor about whether collaboration or assistance from others is permitted.
- Use your own work to complete assignments, exams, papers and theses.
- Cite the source when quoting or paraphrasing someone else's work. Discuss with your professor if you have any questions about whether sources require citation.
- Follow examination rules.
- Discuss with your professor if you are using the same material for assignments in two different courses.
- Be truthful on all university forms.
- Use the same standard of honesty with fellow students, lab instructors, teaching assistants, sessional instructors and administrative staff as you do with faculty.

A tutorial which is helpful for developing a understanding of academic integrity can be found at the following website:

https://libguides.usask.ca/AcademicIntegrityTutorial

12. Policy on Ph.D. Qualifying Examinations

Objective: According to CGSP policy, the purpose of the Qualifying Examination "is to satisfy the academic unit the student has the potential to obtain sufficient knowledge of the chosen general field of study to proceed toward candidacy for the Ph.D. degree". In order for a passing grade to be given, the examining committee must see clear evidence that the student is developing the following qualities of a successful Ph.D. student:

- Independent thought;
- Scientific curiosity;
- The ability to identify gaps in knowledge in a scientific field, and develop a plan to fill the gaps; and
- The capacity for in-depth understanding of underlying mechanisms and scientific concepts.

Form of the Examination: The qualifying examination shall consist of the preparation and submission of a paper followed by an oral examination covering the paper's general subject area. The topic shall be selected by the student based upon their broad field of study and must be approved by the student's advisory committee before writing commences; ideally this should happen during the student's first advisory committee meeting, and by the end of the student's first term in program at the latest. The paper must comprise original work by the student that has been performed at the University of Saskatchewan during their current program of study; however, the topic chosen by the student for the qualifying examination may be selected in conjunction with activities associated with other aspects of the student's program (e.g., a term project forming part of a graduate level course; a state-of-the-art literature review; preliminary analyses, laboratory testing, site investigation, analytical and/or numerical modeling conducted for their thesis research).

The paper will be written independently by the student. The supervisor(s) may offer general guidance, but no editorial assistance or review comments on the technical contents of the paper. Similarly, it is the student's responsibility to select the format and structure of the paper, with the goal of preparing a document that conforms to the style of technical papers typical of their discipline.

The oral examination consists of a 15-20 minute presentation by the student, followed by two rounds of questions from the examining committee. It is intended to discern whether the student has a sound understanding of the subject matter and of the work presented in the paper.

The examining committee for both the written and oral components of the qualifying examination will consist of the student's current advisory committee. The committee will assess the examination on a pass/fail basis. If the committee cannot reach a consensus on its assessment, a vote must be taken. A simple majority shall prevail as the committee's decision. The supervisor and co-supervisor (if applicable) are included in the vote, but the chair will only vote in the event of a tie.

If the student's performance is deemed strong on one aspect of the examination (e.g., the written paper or the oral component), the examining committee may - at its discretion – allow revision and resubmission of the paper and/or a repeat of the oral examination before assessing a pass/fail decision. In such cases, paper resubmission and/or the repeat oral examination should be undertaken within two months, or as soon thereafter as possible.

If the student's all-around performance is deemed unacceptable, the committee will assess a failing grade. In such a case, the committee should further recommend if the student should transfer to a Master's program, or be required to discontinue.

Timing of the Examination: For students enrolled in a Ph.D. program, the written component of the qualifying examination shall be submitted no later than 11 months from the start of the program. The oral component of the examination shall take place as soon as possible after submission of the written component, allowing a reasonable review period for the examining committee (typically two weeks).

Students considered for transfer into a Ph.D. program from a M.Sc. program must complete the qualifying examination between the first and second year of their M.Sc. program to be eligible.

Examination Waiver: At the discretion of the advisory committee, the qualifying examination for a student registered in a Ph.D. program may be waived if the student has completed a thesis-based Master's degree at a recognized institution known to have expectations comparable to those at the University of Saskatchewan. For this purpose, Canadian and recognized North American universities, among others, may be deemed to be acceptable for the waiver.

13. Policy on Ph.D. Comprehensive Examinations

Objective: According to CGPS policy, the purpose of the Comprehensive Examination "is to determine whether the student has a mature and substantive grasp of the field as a whole." In other words, to assess the student's general knowledge of topics cognate to the candidate's field of study.

Form of the Examination: The comprehensive examination shall consist of an oral examination covering the broad area cognate to the candidate's field of study, followed by an optional more targeted written examination assigned at the discretion of the examining committee. The oral component of the examination consists of two rounds of questions posed by members of the examining committee; no oral presentation is required at the beginning of the examination. Typically, the examining committee for both

the written and oral components of the qualifying examination will consist of the student's Ph.D. advisory committee.

The oral examination will typically include questions of a more conceptual nature related to a number of pre-defined subject areas. The questions will be designed to test the student at a senior undergraduate or introductory graduate level of understanding.

The subject areas to be examined will be selected by the Ph.D. advisory committee and communicated to the student. The student should then be allowed a minimum period of two months to prepare for the examination. A list of sample reference material, including texts and other forms of literature, that is representative of the scope and level of difficulty of material to be examined shall be supplied to the student along with the subject areas, with the expectation that the student should be able to study these materials within a time-frame of 2-3 weeks per subject area. Normally, three or four general subject areas will be assigned covering the broad range of the field of study; the supervisor(s) and internal committee members may each take the lead in assigning one of these areas, although the advisory committee may decide upon a different selection mechanism.

Specific topics to be covered in the written portion of the examination will be determined based on the student's performance in the oral examination. If the student's performance is deemed to be acceptable in all of the areas covered, the written portion of the exam may be waived at the discretion of the examining committee.

Upon completion of the examination (oral component plus written component, if applicable), the committee will assess the examination on a pass/fail basis. If the committee cannot reach a consensus on its assessment, a vote must be taken. A simple majority shall prevail as the committee's decision. The supervisor and co-supervisor (if applicable) are included in the vote, but the chair will only vote in the event of a tie.

If the student is assessed a fail, the committee should further recommend if the student should transfer to a Master's program, or be required to discontinue.

14. M.Sc. and Ph.D. Research Proposals[2]

Students in M.Sc. and Ph.D. programs must prepare a research proposal document which will be reviewed and orally examined by their committee members. There are two objectives to be accomplished in the research proposal:

- Clearly identify the problem or issue to be addressed, and provide a clear statement of objectives that will be accomplished in the research.
- Develop a research plan that will accomplish these objectives, and present it in sufficient detail that the advisory committee gains confidence in the project's likelihood of success.

[2] The contents of this section were synthesized from "Developing Graduate Research Proposals and Completing a Graduate Project/Thesis/Dissertation" by Professor B. Thomson (University of New Mexico website, accessed April 2016), and a recent CE 990 presentation.

The research proposal is written as a formal document, and should be written as though it is to be submitted to a funding agency. The proposal document should be formatted according to the standards identified in Section 15 (Thesis Writing Guidelines). Guidelines for proposal contents are given in Appendix D. For M.Sc. proposals, the body of the document should be approximately 15-20 pages. For a Ph.D. proposal, the body of the document should be approximately 20-25 pages. (In both cases, it is assumed that roughly 2/3 of the document will consist of text, and the balance will consist of figures and/or tables.) Approval of a majority of committee members must be obtained before a student may submit a proposal that deviates significantly from these length guidelines.

Students should expect to put considerable effort into their research proposal. Bear in mind that the research proposal establishes the framework for the final thesis document. Indeed, if done well, most of the material contained in the proposal will be used in the final thesis document. Thus, extra effort devoted to producing a high quality research proposal will be recovered in the form of a more efficient and productive research process, and ultimately, a better final document.

Once approved by their supervisor(s) to do so, the student will request (via the Graduate Assistant) an advisory committee meeting during which the committee will orally examine the proposal. The student must submit a copy of the proposal document to committee members at least one week prior to the scheduled meeting. At the meeting, the student will give a 15-20 minute presentation summarizing the proposal, to be followed by two rounds of questions from committee members. Following these questions, the student will be excused while committee members discuss and assess the proposal document and the student's performance during the oral examination thereof.

For the first advisory committee meeting called for the purpose of examining a proposal, possible outcomes are the following:

- Pass: Proposal is accepted (document requires no revisions; oral examination deemed acceptable);
- Conditional Pass: Proposal requires minor revision (performance during oral examination deemed acceptable, but document must be resubmitted for a second review before it is accepted). At the committee's discretion, the revised proposal may be reviewed solely by the supervisor(s) or by the entire committee before it is accepted and assigned a passing grade. Acceptance may be agreed upon electronically in such cases; i.e., there is no need to convene an advisory committee meeting to approve the revised proposal document.
- Remedial Action: Proposal requires major revisions or performance during oral examination deemed to be poor. In such cases, another advisory committee meeting must be scheduled in order to orally examine the proposal a second time. The timing of this second oral examination will be determined at the discretion of the advisory committee and communicated to the student before adjourning the meeting; 2 months is recommended as a general guideline. If a revised proposal is required, it must be submitted to committee members at least one week in advance of the meeting.
- Fail: Committee deems the proposal document and/or performance during oral examination are unsatisfactory, to the point where remedial action is deemed unlikely to result in an acceptable result.

If a second advisory committee meeting is required to assess the proposal, possible outcomes are the following:

- Pass: As described above.
- Fail: As described above.

During either of the afore-noted meetings, if consensus cannot be reached on the proposal assessment, a vote must be taken. A simple majority shall prevail as the committee's decision. The supervisor and co-supervisor (if applicable) are included in the vote, but the chair will only vote in the event of a tie.

If the student is assessed a fail, the committee should further recommend if the student should transfer to a different program (e.g., Ph.D. students might be recommended to transfer to a M.Sc. program; M.Sc. students might be recommended to transfer to a M.Eng. program), or be required to discontinue.

15. Thesis (and Report) Writing Guidelines

Though the instructions that follow were written for M.Sc. and Ph.D. theses, they are also applicable for M.Eng. reports, though these reports will generally be shorter than theses and will contain lesser amounts of original contributions to knowledge.

The following is a description of a thesis, taken directly from the CGPS website (https://students.usask.ca/graduate/thesis-preparation.php#Beforebeginning):

> "The thesis is an essential element of a research-based graduate degree.
>
> "The thesis:
>
> "serves as evidence that a student is able to describe, explain and defend the research work that he/ she has undertaken, and how it contributes to and furthers the knowledge within the discipline.
>
> "describes why the research work was undertaken, justifies the methods used, and provides an interpretation and analysis of the results.
>
> "prepares the student to undertake further research in the field of study and to make significant contributions to the field of knowledge
>
> "With these principles in mind, a thesis should be presented as a single, cohesive, consistently formatted and unified document, which clearly articulates the progression of a student's chosen field of research. A thesis presents a student's research work as a whole, rather than discrete pieces, and the student should be able to justify and defend each part of it, from the introduction through to the conclusion."

Instructions on thesis writing, including factors to consider before beginning the thesis, formatting and style guidelines, and the process of submitting a thesis to the examining committee, are given at the CGPS website:

> https://students.usask.ca/graduate/thesis-preparation.php

Further to the formatting instructions given at the above-captioned website, students in the Department are required to use a line spacing of 1.5.

For students writing a traditional thesis, the typical structure for the main body of the thesis is given in Appendix E.

With regards to manuscript-style theses, CGPS policy states the following: "With the permission of his or her advisory committee, a student may submit a manuscript-style thesis. A manuscript-style thesis is a document that includes one or more scholarly manuscripts written in a manner suitable for publication in appropriate venues." CGPS policy and guidelines for manuscript-style thesis can be found at the following website:

https://students.usask.ca/graduate/manuscript-style.php#Beforeyoubegin

Regardless of the formatting standard used for manuscript(s) when submitted for publication, manuscript(s) used in a thesis must be reformatted to match the standards given above for traditional theses. Additionally:

- Pages must be numbered sequentially through the entire thesis;
- Chapters, sections and subsections must be numbered sequentially;
- Figures, tables and equations must be numbered sequentially;
- Introductory and concluding chapters which unify the materials presented in the manusctipts must be written.

For students writing a manuscript-style thesis, content guidelines are given in Appendix F.1 (M.Sc.) and F.2 (Ph.D.).

Regardless of the chosen thesis format, students are encouraged to write their thesis in parallel with conducting their research, and to discuss procedures and timing for getting feedback from supervisor(s) early in the stages of thesis preparation. Supervisors often prefer to review chapters on an individual basis, as they are completed, in advance of (and in addition to) reviewing the thesis as a whole. Students should recognize that it will take some time for their supervisors to undertake their review(s) and that multiple iterations of review and revision may be required before the thesis is deemed ready for examination. Students must understand that the best way to expedite the process is to submit thesis contents that have been carefully and concisely written, proof-read, and properly formatted.

16. Thesis Defence Procedures

Once approved by their supervisor(s) to do so, the student will submit the thesis to committee members for review. Committee members typically require up to 3 weeks to complete their review of the thesis (and perhaps longer in the case of lengthy theses), after which they might approve it to go to defence, or they might require revisions (and perhaps a second review) before approving it for release to the external examiner. In turn, the external examiner will typically require up to three weeks to review the thesis for M.Sc. theses, and six weeks for Ph.D. theses. As such, it is prudent to plan on a period of 6 to 8 weeks from the time of thesis submission to thesis defence for M.Sc. students, and 9 to 11 weeks for Ph.D. students.

The Graduate Assistant, Graduate Chair and CGPS personnel will make most of the arrangements for the defence, including scheduling, coordinating the selection of an external examiner, and sending a copy of the thesis to the external examiner. The student must not make direct contact with the external examiner.

Students interested in knowing more about procedures for arranging M.Sc. and Ph.D. defences may consult relevant CGPS policies at the following website:

https://cgps.usask.ca/policy-and-procedure/Academics/defence.php

In the Department, defences begin with a short (15-20 minute) presentation during which the student summarizes the thesis contents. This presentation is open to the general public. Following the presentation, members of the public will be excused, and examining committee members will remain. The chair will then adjudicate the oral defence.

Following the oral defence, the student will be excused and the examining committee will discuss and assess the thesis document and the oral defence. Possible outcomes (recommendations), and the process for reaching them, are described at the following website:

http://www.usask.ca/cgps/documents/pnp_m_phd.pdf

Once a recommendation has been reached, the student will be invited back into the meeting room and advised of the outcome.

17. Post-Defence Procedures

Even after a successful defence, thesis revisions are typically required in response to feedback from examining committee members. The length of time required for these revisions varies widely; often falling in the 1 to 6 week range (full-time equivalent work). The supervisor(s), and in some cases selected committee members, will then review the thesis again before officially approving it.

Administrative procedures required for formal completion of the M.Sc. or Ph.D. program will be identified in a handout given to the student at the conclusion of the defence.

Appendix A1:
General Information about Funding and Scholarships

Faculty members in the Department generally provide funding to M.Sc. and Ph.D. students using their research grants and/or contracts. Faculty are encouraged to provide funding at a levels that meet or exceed those specified by Tri-Agency funding agencies such as NSERC (M.Sc: http://www.nserc-crsng.gc.ca/Students-Etudiants/PG-CS/CGSM-BESCM_eng.asp ; Ph.D.: http://www.nserc-crsng.gc.ca/Students-Etudiants/PG-CS/BellandPostgrad-BelletSuperieures_eng.asp). However, specific funding arrangements are not dictated by the Department, hence graduate students should discuss funding arrangements with their supervisor(s) before starting their programs to ensure that both parties have consistent expectations regarding funding amount and duration.

Additionally, all M.Sc. and Ph.D. students in the Department of CGE are automatically considered for the following awards:

Award	Source
Devolved Scholarship	CGPS
Graduate Research Fellowship (GRF)	CGPS
Graduate Teaching Fellowship (GTF)	CGPS

The Department awards these as ½ scholarships/fellowships, and requires that matching funding be provided from other sources (e.g. supervisor research funding, other major scholarships) to ensure scholarship/fellowship recipients are receiving as a minimum full Tri-Agency support levels. On average roughly 10 to 12 graduate students receive ½ awards within the Department each year.

Decisions about devolved scholarships are typically made in September and January, and decisions about GRF and GTF awards are typically made in June. Award recipients will be notified by the Graduate Chair shortly after decisions have been made.

Additional scholarships may be available to graduate students via CGPS, the College of Engineering, and various other organizations. Information about CGPS scholarships are available from the following website:

https://grad.usask.ca/funding/scholarships.php

Information about other scholarships will be relayed to graduate students as they are received by the department, generally by email.

Appendix A2:
Devolved Scholarship Action Plan

Devolved Scholarship Action Plan

Unit/School/College: Dept. of Civil, Geological and Environmental Engineering

I. Describe the goals of the unit/school/college and how devolved funding will contribute to the priorities of the university, including the role of graduate awards and its potential for enhancing the position of graduate studies.

The primary goal of the graduate program in the Department of Civil, Geological and Environmental Engineering (DCGEE) is to train highly qualified persons for professional practice in all areas of civil, geological and environmental engineering. This goal is accomplished through the delivery of a diverse curriculum of graduate courses and undertaking applied research studies relevant to industry and the public sector. Graduate awards are used by DCGEE to increase the number of graduate student opportunities in our department, while providing an appropriate base-level of funding to our graduate students.

In keeping with the College of Engineering's strategic plan, DCGEE's aspirations are as follows: (1) To distinguish ourselves for research excellence, particularly in areas of strategic importance to our province: engineering for agriculture, environment, health, sustainable energy, and mining and minerals; (2) To recognize and advance unique opportunities in engineering for sustainable infrastructure, particularly for rural, remote, and Indigenous communities; (3) To actively engage with industry, government, and the Peoples of Saskatchewan to foster genuine and mutually beneficial partnerships; and (4) To collaborate with university colleagues to co-create dynamic and impactful knowledge, expand our faculty and graduate student complement, and deliver a superior graduate student experience.

II. Identify the degree program(s) in your unit that are eligible for devolved funds. If more than one program is eligible, indicate the percentage of the devolved allocation that each program will receive.

Program:	PhD	Percentage of allocation:	40%-60%
Program:	MSc	Percentage of allocation:	40%-60%
Program:		Percentage of allocation:	
Program:		Percentage of allocation:	
Program:		Percentage of allocation:	

If eligible program is not allocated, provide a rationale.

Devolved scholarship funding is used to support research-based programs in DCGEE, hence it is not used to support students in our course-based programs (MEng and PGD).

III. Describe the criteria for Master's and Doctoral students eligible to receive devolved funding.

Master's

GPA: 80%

Maximum time in program: 2 yrs.

Other criteria for Master's

The 80% GPA cited above is for students with undergraduate or graduate degrees from a Canadian university; the minimum level of academic performance required for consideration is the equivalent of ≥80% over the last two years of a program in the College of Engineering.

For entering students with undergraduate or graduate degrees from international universities the minimum level of academic performance required for consideration is the equivalent of a degree with great distinction within the College of Engineering (i.e. equivalent of ≥82% over the last two years of a program in the College of Engineering). Further, the student should be considered a top prospect with a ranking within the top 5 to 6 % of their class.

No distinction is made between Canadian and international students once they have established an academic record within our graduate program.

Doctoral

GPA: 80%

Maximum time in program: 3 yrs.

Other criteria for Doctoral

The 80% GPA cited above is for students with undergraduate or graduate degrees from a Canadian university; the minimum level of academic performance required for consideration is the equivalent of ≥80% over the last two years of a program in the College of Engineering.

For entering students with undergraduate or graduate degrees from international universities the minimum level of academic performance required for consideration is the equivalent of a degree with great distinction within the College of Engineering (i.e. equivalent of ≥82% over the last two years of a program in the College of Engineering). Further, the student should be considered a top prospect with a ranking within the top 5 to 6 % of their class.

No distinction is made between Canadian and international students once they have established an academic record within our graduate program.

MSC students who transfer to a PhD program have three years of eligibility from the beginning date of their Master's program.

MSc students on scholarship who complete a Master's degree and then proceed to a PhD program have 2 additional years of eligibility from the beginning date of their PhD program.

Devolved Scholarship Action Plan

Unit/School/College: Dept. of Civil, Geological and Environmental Engineering

IV. Describe the process for determining the value of the award per eligible student.

DCGEE awards half scholarships ($670 per month for MSc; $990 per month for PhD) with matching support (minimum $670 per month) provided by supervisors or from other major scholarships. Exceptions may be considered (e.g., full scholarship support) in the case of students supervised by new faculty members who have limited access to funding, or by established faculty on an emergency basis.

Funding levels are reviewed from time to time, with the intent of achieving total funding (devolved scholarship + other contribution) comparable to Tri-Agency support levels.

V. Describe the selection process for awarding funds to eligible candidates in the competition. Your description should include the process for awarding scholarship and employment portions.

Please note: the maximum portion of the devolved allocation that can be used for employment is located on the annual memo you receive from the College of Graduate & Postdoctoral Studies. It was determined using the formula below.

DCGEE uses devolved scholarship funding solely for scholarships; no portion is awarded in the form of employment income.

All graduate students (currently enrolled and those accepted for admission by CGPS) are considered for a devolved scholarship award twice each academic year. The primary evaluation is made shortly before term1 begins in September. At that time all continuing commitments to students already receiving devolved scholarships are compared to monies awarded to the Department for the upcoming academic year. This process determines the number of new scholarships that can be awarded. A sub committee of the Department's Graduate Administration Committee (GAC) then reviews the academic record of all current students who are eligible and the academic record of incoming students. New scholarships are allocated based upon the Department's guidelines (see below) and the availability of funds. If the number of sufficiently qualified students exceeds the funds available all monies will be allocated for the upcoming academic year. If there are not a sufficient number of qualified students to award all the scholarships available then monies are held in reserve for a second round of evaluations in January.

In the January round of evaluations all currently enrolled eligible students and any incoming students for term 2 are considered for a scholarship. Students who may have just missed out in the first round will have had an opportunity to improve their academic record based upon classes taken in term 1. Remaining monies are allocated in the second round of evaluations to ensure the Department uses all its funds within ± 10% of it annual allocation from CGPS.

Guidelines for Award of Department Devolved Scholarships
General guidelines:
• Students must achieve a high level of academic performance to be awarded a scholarship (see Section III for minimum GPA; previous publications and/or awards may also be considered, especially in the case of PhD students).
• Priority will be given to indigenous students.
• Preference will be given to under-represented segments of the graduate student population.
• Preference will be given to PhD students.
• Students receiving scholarships must maintain continuous registration throughout their program.

For entrance scholarships:
• Priority will be given to students with undergraduate degrees from Canadian universities.
• Entrance scholarships will not be awarded for studies beginning in May. However, a student can be considered in the spring and offered a scholarship beginning in September. If a high level of academic performance is maintained, and sufficient funding is available, the period of scholarship eligibility may be extended by 1 term (4 months) for a student who started in May.

For scholarships awarded based upon performance within the initial portion of a graduate program within the Department:
• No distinction is made between Canadian and international students once they have established an academic record within our graduate program.
• At least two classes should be taken during a term in order to establish an academic record (exceptions may be made for PhD students due to limited course requirements).

Other Considerations:
Given a pool of students who are reasonably equal in level of academic achievement, the following factors will also be considered in awarding scholarships:
• Assistance to new faculty for start-up of their research programs;
• Use of scholarship funds to recruit excellent new graduate student prospects;
• Use of scholarship funds to support as many graduate students as possible;

VI. Describe your renewal policy (minimally student must have an annual committee meeting prior to renewal).

Once a student is awarded a scholarship, a student must maintain a session weighted average of a least 75% to retain their scholarship.

Students who have completed their course work must be fully engaged in their research and must be making satisfactory progress in their program as determined by the advisory committee.

Devolved Scholarship Action Plan

Unit/School/College: Dept. of Civil, Geological and Environmental Engineering

VII. How will the assignment of devolved funding be administered for students holding other funding?

DCGEE awards half scholarships with matching support provided by supervisors or from other major scholarships. No upper limit is placed on the amount of matching support.

Students receiving devolved scholarship funding are not permitted to receive the equivalent of full support from an employer.

VIII. What encouragement will there be for devolved recipients applying for Tri-Agency scholarships?

Students who are recipients of DCGEE devolved scholarship funding are required to apply for Tri-Agency scholarships, if eligible.

IX. Describe how your scholarship plan will address under-represented students (i.e. Indigenous students, visible minorities, etc.) within your program.

The Department fully supports the Canadian Government's Tri-Agency goals for equity, diversity and inclusion, which include the belief that equity, diversity and inclusion strengthen the post-secondary community and the quality, social relevance and impact of research.

The Department recognizes that we are on Treaty 6 Territory and the Homeland of the Métis. We pay our respect to the First Nations and Métis ancestors of this place and reaffirm our relationship with one another. As stated in the guidelines presented in section V, indigenous students who meet the eligibility criteria (as defined in section III) will be prioritized for devolved scholarship funding; this means that scholarship funding will be awarded to eligible Indigenous students before awarding scholarship funding to eligible non-Indigenous students.

The Department fully supports Engineers Canada in its 30 by 30 initiative, which has the goal of raising the percentage of newly licensed engineers who are women to 30% by the year 2030. More than 30% of the students currently receiving devolved scholarship funding are female, and the Department is committed to sustaining 30% as a minimum threshold.

		April 1, 2020
Graduate Chair	Signature	Date
Department Head	Signature	Date

Note:

1. Units are allowed a carry-over amount of +/-10% of the annual allocation at the end of the fiscal year.

2. Units will be allowed to use devolved scholarship funding to support 128 hours of work (4 hours per week for 2 terms) per $20,000 of devolved scholarship funding within the annual allocation. The amount of funding that may be used for employment will be determined by

   Dollars that may be used for employment = $\left[\frac{\$Annual\ Allocation}{\$20{,}000} * 128\right] * negotiated\ hourly\ rate$

Appendix B:
Graduate Student - Supervisor Agreement

Available online at:

https://students.usask.ca/documents/graduate/student-supervisor-agreement.pdf).

Appendix C:
Safety Orientation Checklist

Available in your PAWS channel under MY COLLEGE.

Appendix D:
Research Proposal – Content Guidelines

Research proposals are generally expected to have the following components:

- Title Page
    - Should include the title of the proposed research, the student's name, program and supervisor, and the date the document was completed.
- Abstract
    - Optional for short proposals; student should discuss the need for an abstract with his/her supervisor.
- Table of Contents
- Introduction
    - General description of the problem under consideration;
    - Clear statement of the research question or hypothesis to be addressed, and the significance of this question or hypothesis;
    - Clear statement of the research objectives (often cast most effectively as an overall objective followed by specific sub-objectives);
    - General statement of the methods that will be used to achieve the objectives;
    - Scope (e.g., what topics will / will not be considered in the research; what data types and analysis methods will / will not be used, etc.).
- Literature Review
    - Thorough review of information relevant to the research topic;
    - This chapter will draw heavily on previous work by others and external sources of data and should be extensively referenced;
    - Summarize, critically appraise and synthesize published literature and reports;
    - This chapter should form the basis of the second chapter of the thesis prepared at the conclusion of the research, though the version written for the research proposal must be highly focused due to the length constraints imposed on the proposal.
- Methododology
    - Describe how the research will be conducted. Identify methods of collecting data;
    - Provide diagrams of experimental equipment to be built. Identify analytical methods to be used (give references). Provide maps showing locations of field sampling stations. Develop the theory of modeling studies. Identify sources of information;
    - Describe expected results and methods of analyses;
    - Describe the data or information expected to be generated by the research. Identify its form (statistical data from questionnaires, tables of data from instruments, papers from library & Internet searches, computer model results, etc.);
    - Describe how the data will be processed, summarized, or analyzed. Identify statistical methods to process the data. Describe how literature, interviews, or other non-quantitative information will be assimilated and interpreted;
    - Provide a research schedule with specific tasks and specific milestones that can be used to track the progress of the project. Identify deliverables to be generated during the research (e.g., conference papers, refereed journal papers, thesis document, patents, etc.);

    - Budget: Optional; consult with supervisor(s) to determine if this is necessary. May be relevant to some projects involving field work (travel, accommodations, etc.), for example.
- References
    - List reference cited in the proposal, using the same format as the final thesis document (see Appendix E).

Appendix E:
Content Guidelines for Main Body of Thesis–Traditional Format

- Introduction
    - Similar contents to proposal (see Appendix D), though may include an additional section explaining layout of the thesis, especially if thesis structure is unique or unusual.
- Literature Review
    - Similar contents to proposal (see Appendix D), though up-to-date and likely more extensive.
- Theoretical Development (optional)
- Description of Method (Methodology)
    - Enables evaluation of technical level;
    - Allows others to repeat your work;
    - Components may include any of the following:
        - Test setup and procedures;
        - Instrumentation and data acquisition;
        - Methods of Analysis;
        - Numerical Model Selection Description and Modelling Parameters;
        - Problems encountered and overcome;
        - Identification and discussion of flaws, problems, simplifying assumptions;
        - Case study.
- Results and Analysis
    - Summary of major results;
    - Discussion of significance;
    - Approach:
        - Well chosen graphs, figures and tables;
        - Include some discussion for each;
        - Concise and focused; limit repetition, place supporting materials in appendices.
- Summary, Conclusions and Recommendations
    - Summary:
        - Overview of objectives and methodology.
    - Conclusions:
        - Major results in distilled form.
        - Should correspond to objectives.
        - No new information presented.
        - Do not use figures and tables.
    - Recommendations:
        - Future studies; implementation of research outcomes.
- References
- List all references cited in the thesis, in alphabetical order. It is suggested that references be cited using the author / date format. For example (Smith, 1995; Jones and Allen, 2002; Sanchez et al., 2005). Many formatting options exist (e.g., see http://libguides.usask.ca/citation). Students should consult with their supervisor(s) to identify a format deemed appropriate in their area of study (e.g., the format used by a leading journal in the area), and rigorously and consistently use this format.

Appendix F1:
Requirements for the Format of Manuscript-style M.Sc. Thesis

In addition to a thesis structured as a monograph, the Department of Civil, Geological & Environmental Engineering (DCGEE) allows the submission of a manuscript-style M.Sc. thesis; i.e., "a document that includes one or more scholarly manuscripts written in a manner suitable for publication in appropriate venues"[3]. If an M.Sc. student wants to submit a manuscript-style thesis, the following steps should be followed:

1. Approval of the manuscript-style thesis format must be granted to the student by the advisory committee. The committee chair should document the committee's approval in the student's file. See step #11 for more details about advisory committee approval;
2. The student must review the College of Graduate and Postdoctoral Studies (CGPS) policies for manuscript-style theses (https://students.usask.ca/graduate/manuscript-style.php#Beforeyoubegin) and propose a thesis structure that adheres to these policies, in addition to specific DCGEE policies described below;
3. An M.Sc. thesis should contain, at least, one manuscript. Regardless of the number of manuscripts in the thesis, at least one must be intended for a thoroughly peer-reviewed venue, and this manuscript must have been submitted prior to the thesis defense;
4. There must be material preceding the manuscript(s) which sets the context for the work, and material that draws out the overall objectives and implications of the work (typically Chapter 1 as a general introduction, and prefaces to each manuscript-based chapter);
5. If the thesis includes multi-authored manuscript(s), the student's contribution to each multi-authored manuscript must be documented in the preface(s), thereby clarifying the manner in which this work becomes part of the student's thesis;
6. As per CGPS policy, the student must be the lead author of at least one manuscript;
7. There must be material that draws out the overall conclusions and contribution of the work (typically an end chapter as general conclusions);
8. An additional chapter of general literature review might be requested by the advisory committee, if deemed necessary;
9. An additional chapter of methodology might be requested by the advisory committee, if deemed necessary;
10. The student is encouraged to add additional technical details as appendices after the "General conclusions";
11. The M.Sc. student's research proposal must state the number of manuscripts to be included in the thesis, the focus of each manuscript, the intended publication venue for each manuscript, the type of each manuscript (e.g., full-length journal article, technical note, conference paper), and must also list the non-manuscript-based chapters and appendices proposed for the thesis. This information will serve as the basis for the advisory committee's approval of the manuscript-based thesis, though the thesis structure (including the number of manuscripts) may be modified by agreement of the committee as the research progresses; and
12. For each manuscript-based chapter that is deemed to require modifications after the defense, the chapter's preface must state that what is reported in the thesis is a modified (revised) version of the original manucript.

[3] College of Graduate and Postdoctoral Studies (2020): *Manuscript-Style Theses and Dissertations*, https://students.usask.ca/graduate/manuscript-style.php#Beforeyoubegin, Accessed Jan. 31, 2020

The manuscript-style M.Sc. thesis must conform to the following format guidelines:

- Each chapter will have a reference list;
- All chapters will have a consistent format conforming to CGPS requirements (i.e., the format required for journal or conference submission will likely have to be modified for the thesis); and
- The figures and tables must be inserted at the appropriate locations within the chapters, similar to a monograph style thesis.

Appendix F2:
Requirements for the Format of Manuscript-style Ph.D. Thesis (The Sandwich thesis)

In addition to a dissertation structured as a monograph, the Department of Civil & Geological Engineering allows a Ph.D. thesis in which several of the chapters have been published, accepted, or submitted as one or more journal articles. It is understandable that this type of thesis has the potential for some repetition among the different manuscripts/papers. The document has to be either a monograph or a manuscript-style (Sandwich) thesis; a combination format is not acceptable. If the Ph.D. student wants to submit a manuscript-style, then the following procedures should be followed:

- An approval of the format should be granted to the student by the advisory committee. The committee chair should put a note of the committee's approval in the student's file;
- A Ph.D. thesis should contain, at least, THREE papers. The papers must be intended for thoroughly peer-reviewed venues (i.e., mostly journal articles). At least one of the papers should be tentatively accepted (subject to some revisions) for publication;
- There must be material preceding the articles which sets the context for the work, and material that draws out the overall objectives and implications of the work (typically Chapter 1 as general introduction and prefaces to each article);
- If there is multiple authorship of the separate articles, there must be a preface to the thesis that documents clearly the student's contribution to each of the papers, and the student's contribution to the originality of the work, thereby clarifying in what way this work becomes the student's thesis;
- There must be material that draws out the overall conclusions and contribution of the work (typically an end chapter as general conclusions);
- The student is encouraged to add additional technical details as appendices after the "General conclusions";
- An additional chapter of general literature review might be requested by the advisory committee if deemed necessary; and
- If after-defence modifications are deemed necessary, then it has to be stated at the start of the chapter that what is reported in the thesis is a modified (revised) version of the original published/accepted/submitted paper.

The manuscript-style Ph.D. thesis must conform to the following format guidelines:

- Each Chapter will have a reference list;
- All Chapters will have a consistent format conforming to College of Graduate Studies and Research requirements (i.e. the format required for journal submission will likely have to be modified for the thesis); and
- The Figures and Tables must be inserted at the appropriate locations within the Chapters similar to a monograph style thesis.