



Earth System Science (ESSC) 676

Thesis II (Research Stage 1) (Revision 1)

Status:

Replaced with new revision, see the [course listing](#)  for the current revision 

Delivery mode:

Individualized study online  . Delivered via Brightspace.

Credits:

3

Area of study:

Science

Prerequisites:

ESSC 675. Program director and supervisor approval required for the thesis route. Students should contact the graduate program advisor for the process to obtain permission to register in any of the thesis courses.

Precluded:

None

Faculty:

[Faculty of Science and Technology](#) 

Notes:

This is a graduate-level research course, and students must have a supervisor in order to take the course.

Instructor:

Dr. Farook Al-Shamali

Overview

The master's thesis consists of five (5) three-credit courses. These courses allow students to apply concepts and theoretical knowledge that they have acquired through coursework to address specific scientific questions related to Earth system science and must represent the results of the student's independent work after admission to the program. The proposed topic for the thesis should be defined in a mini-proposal that includes a brief statement outlining the research question, the proposed method of treatment, and the arrangement made for faculty supervision. The mini-proposal must be approved by the supervisor and program director before registering in these courses.

The thesis involves two milestones for evaluation: a thesis proposal examination at the end of the first course (ESSC 675) and a final thesis examination that takes place after completing the research work at the end of the last course (ESSC 679). Each examination includes an oral defence in addition to the written report, both of which are assessed by an examination committee.

Overall, the outcomes of the thesis will indicate a deeper understanding of Earth system science and prepare the student for further academic research or professional career.

Outline

The MSc ESS thesis consists of five 3-credit elements, namely ESSC 675, ESSC 676, ESSC 677, ESSC 678, and ESSC 679. These elements are not

conventional courses; however, they are treated similarly for administrative purposes.

MSc ESS students who elect to follow the thesis route are required to complete the following courses in order:

- ESSC 675 Thesis I (Proposal Writing)
- **ESSC 676 Thesis II (Research Stage 1)**
- ESSC 677 Thesis III (Research Stage 2)
- ESSC 678 Thesis IV (Research Stage 3)
- ESSC 679 Thesis V (Thesis Writing and Defence)

The thesis proposal will be developed in ESSC 675 under the supervision of the supervisor and supervisory committee. The supervisor and the supervisory committee must formally approve the thesis proposal. The student will conduct a formal presentation of the proposal to the committee. The presentation is followed by an oral examination.

MSc ESS students will have six months to complete each of the following courses: ESSC 675, 676, 677, and 678, successively. For ESSC 679, students will have six months to complete the manuscript plus two months for review and required revisions as well as the oral examination.

Learning outcomes

Upon successful completion of this course, you should be able to

- frame scientific questions and conduct interdisciplinary research that utilize technology to address problems.
- apply an interdisciplinary approach to address intricate issues attendant to increasing intersections of scientific disciplines.
- employ scientific numeracy and quantitative approaches when searching for solutions to Earth system issues.
- communicate effectively to an interdisciplinary audience about issues concerning the Earth system.
- demonstrate superior skills in data collection and analysis, information handling, digital literacy, and communication.

Evaluation

To **receive credit** [↗](#) for the integration thesis, the student must obtain a PASS grade for each of the required courses.

Materials

The **thesis handbook** [↗](#), which provides guidance to students who are undertaking a thesis as part of the completion requirements for the MSc ESS program, is available online. The handbook includes relevant information, such as the stages in the thesis, as well as templates and guidelines.

Students are expected to obtain and pay for all materials used in the projects. The MSc ESS program does not currently offer funding for students to conduct their projects; however, information on the Athabasca University Graduate Research fund can be found on the **Research Centre's website** [↗](#).

Important links

- › **Important Dates and Deadlines** [↗](#)
- › **MSc ESS Contact Information** [↗](#)
- › **MSc ESS Program Regulations** [↗](#)

Athabasca University reserves the right to amend course outlines occasionally and without notice. Courses offered by other delivery modes may vary from their individualized study counterparts.

Opened in Revision 1, August 25, 2025

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