**Faculty of Science Course Outline Preparation Guide**

**for the Honours Thesis Course**

**How to Use this Guide**

This WORD file is provided as a resource to create the Honours Thesis/Research course in your Department in the Faculty of Science. It conforms with the [Senate Policy on Course Outlines](https://smu.ca/webfiles/8-1012_SenateCourseOutlines.pdf) with those elements listed in blue indicating they are required as per the policy. The policy can be found by clicking on the hyperlink in the last sentence. A link to the Senate policy is also posted on the Faculty Resources page of the Faculty of Science website. Use the **blue titles** as a starting point to creating your outline for your Department’s Honours Thesis/Research course.

It is important to note that there are many Senate-required elements of the course outline (many more than a simple grading rubric), and all are included in this Guide, for convenience.

For the Faculty of Science in particular, the Academic Calendar states the following relevant regulation:

**Faculty of Science Regulation 14, Academic Calendar:**

“In a program requiring an Honours Thesis, students complete the thesis course appropriate for their program. In keeping with **Academic Regulations 4b\*\***, a grading rubric for Honours Thesis courses will be provided. Thesis research will be conducted under the direction of the faculty supervisor, and the completed thesis will be evaluated by the supervisor and one (or more) other faculty member(s) associated with the program. At least one of the supervisor or evaluator(s) shall be a full-time faculty member at Saint Mary’s University. The student is also required to give a public presentation of their thesis work in a forum approved by the program. Upon approval by the thesis evaluators, an electronic version of the completed thesis shall be submitted to the university library.”

**\*\*Academic Regulation 4b, Academic Calendar:**

“On the first day of class for a course, instructors must provide students with a written copy of the course outline. The outline must conform to the Senate Policy on Course Outlines. In accordance with the Policy, the outline must include the grading system to be used in the course. The grading system includes the relative weight which will be given to class and/or laboratory participation, examinations, tests, written assignments and other means of evaluation. The statement must also show how these evaluations will be used to determine final letter grades. Subsequent changes to this system must also be made available to students in writing. A copy of the course outline and any subsequent changes to it must be placed on file in the office of the Department Chairperson and Dean of the Faculty at the time when they are distributed to the students.”

Feedback on this Guide may be directed to the Associate Dean of Science – Curriculum & Operations using [kathy.singfield@smu.ca](mailto:kathy.singfield@smu.ca)

Revised 2019

|  |  |
| --- | --- |
| **General Information**  **[Course Title]**  **[DEPT 4 letter code & course number]**  **6 credit hours** | Always use the exact title listed in the Academic Calendar.  With the listing of the number of credit hours, it is helpful to note here for students that this course spans Fall and Winter semesters. |
| **Contact Information**  **Name and Title of the Supervisor**  **Office Hours (day/time/location)**  **Course Site** | For honours thesis/research courses in Science, the instructor of record on Banner is the Department Chair (or designate) and the cap set to zero, so that enrolment in the course can be effectively restricted to those students who have been accepted into the Honours Program, and who therefore have already secured a research supervisor. However, for the purpose of the course outline for this course, the name of the supervisor(s) is listed here.  Supervisor’s office location/phone/email (and any instructions for email ‘subject’ line.)  (If applicable) List link to learning management system (e.g. Brightspace) where common resources (including course outline) for all honours students in the program or this course only, are kept for their easy access. |

|  |  |
| --- | --- |
| **Course Information**  **Course Description** | Enter the course description exactly as it appears in the Academic Calendar.  In addition to writing the Academic Calendar entry, the Department is strongly encouraged to communicate the goals for the course as they relate to the Department’s Honours Program. The following Faculty of Science text can be used to help articulate the goals of this course in **your** Department.  The primary goal of the thesis project is to provide a unique opportunity for honours students to work with a faculty member, to rigorously focus their curiosity in the pursuit of research during the final semesters of their B.Sc. degree. The goal is to provide a culminating experience in which students tie together knowledge and skills learned throughout the major to critically and creatively explore new knowledge through scientific testing of ideas. Students engage in a (hands-on/in-depth/applied) guided (inquiry/study/analysis/synthesis) where they can formulate a (question/idea/hypothesis), design a (investigation/study/solution/test), analyze and interpret results. The project is ultimately described in a thesis, a scholarly paper written by the student. The student can defend their work to a public audience. Successful graduates of the Honours Program are well prepared for graduate study, careers in science, and lifelong science literacy. |
| **Description of the Project** | A summary of the specific proposed research project can be included here. This section of the course outline would be unique per project/student. |
| **Pre-requisites:**  **Co-requisites:**  **Notes:** | *Prerequisites must be listed exactly as they appear in the Academic Calendar. Co-requisites may be listed only if they appear in the Academic Calendar and must be listed exactly as they appear in the Calendar. If there is a NOTE in the course description in the Academic Calendar, it may be listed here as it appears in the Calendar.* |

|  |  |
| --- | --- |
| **Required (and Recommended) Materials:** | List required texts, and any other materials that the student is required to get in order to do the work on which they are assessed. State clearly if there will be other required assigned readings. Link to the Department’s bibliography of recommended reference material, if this is available. Required items not provided to the student might include: textbook, field guide, recording materials (e.g. dedicated lab book), and personal items (e.g. personal lab coat, personal ear protection, personal eye protection).  Some instructors prefer to add recommended materials (listed separately) to this section. These might include such items as suggested reading materials related to thesis writing, format and style in the genre, and data analysis.  Departments should consider highlighting University resources available to Honours students. For example, students are expected to obtain and comply with the information contained in Theses Preparation, Format and Submission[Guidelines](https://smu.ca/academics/archives/theses.html) available from the Library. Students are also encouraged to use the [Writing Centre and Academic Communications’ Student Services](https://smu.ca/academics/writing-centre-student-services.html) available to them.  This section is also an appropriate place to list any standard University forms that need completion prior to the commencement of any research (e.g. research ethics). |

|  |  |  |
| --- | --- | --- |
| **Methods of Course Delivery/Description of Instructional Approach** | | It is likely that the course is delivered using a guided inquiry method of delivery. Describe the instructional approach and include details on any directed learning and/or independent learning. What can the student expect to encounter? Does the course deliver include any of the following, for example:  … practical laboratory work;  … outside field work;  … travel;  … off-campus archival investigations;  … extensive library research;  … interviews or interaction with human subjects;  … any group work or other collaborative efforts;  … extensive use of technology;  … handling of potentially dangerous materials  … specialized training;  … extensive data analysis;  … journal club discussions;  … regular supervisory discussions;  … attendance and/or participation in regular group meetings or meetings with supervisor;  … oral or written presentations, or any peer review activities |
| The honours research thesis does not take the form of a traditional course in the student’s schedule, and there are normally no lecture or lab times listed on Banner. It is especially important for student success to set expectations early in the course. It is fair to students to let them know immediately that they are expected to maintain a steady level of work on their project over both fall and winter semesters and that regular contact with their supervisor is key to making their best effort at staying on track for success. Some Departments may choose to guide their students further by suggesting an average number of hours per week that the student should plan to reserve for advancing their work in the project. | | |
| **Learning Outcomes** | The student learning outcomes (SLOs) of the thesis course are a very important way to communicate to your honours students what they can aim to achieve from this research experience, and therefore guide them in their efforts. SLOs help to highlight aspects of the research process that can sometimes become lost for many students if they focus only on the end result. Letting the honours students know at the beginning of their projects what these expectations are, encourages a more rewarding and self-directed approach where they can assume more responsibility for their learning in this unique, senior course. In order to provide a powerful framework to the student and also serve the program, these statements of expectation are connected with the required assignments and assessments in the course.  Your Department can help to inform the formulation of SLOs for this course by reviewing relevant examples in their disciplines at other universities. The list provided below can be used as is, or as a starting point for creating a list more suitable for students in your program. It has been created with an attempt to contextualize the high-arching honours level attributes we agree our graduates should demonstrate, into meaningful and concrete expectations for the student. SLOs are measured in the course assessments. The SLOs are written in this, now familiar style:  Students should aim to improve the following abilities which will serve them in their future research, learning, and career. Students can expect these learning outcomes to be reflected in assignments, activities and major assessments such that upon successful completion of an honours research project, students should be able to demonstrate an ability to:   * be proficient in accessing information from a variety of peer-reviewed literature sources; * critically review the scientific literature in the area of their discipline; * synthesize evidence to formulate a coherent argument or point of view, and/or support a conclusion; * apply their knowledge, and methods/skills/techniques; * approach research challenges and propose solutions in a scientific way; * manage time effectively and develop timelines; * recognize any ethical or other impacts of their work; * communicate results in a professionally acceptable way. | |

|  |  |  |  |
| --- | --- | --- | --- |
| **Course Content and Grading Scheme** | Course components (and any scheduled workshops or other sessions) including assignments, their submission deadlines, and their value towards the course grade, should be organized in a table with dates listed. If the Department holds a common honours orientation session for the students in the fall, or a timely information literacy or writing workshop, these and their scheduled times can be listed here. The different components are described in the next section, where anyperformance requirements are explained and any relevant policy is also detailed. | | |
| Examples of some potential course components of an honours thesis course that you might consider are listed below. | | | |
| **Course Component\*\*** | | **%**  **where applicable** | **Dates/Deadlines** |
| Any form/ethics review due prior to research commencing | |  |  |
| Any safety training | |  |  |
| Honours orientation meeting | |  |  |
| Research Proposal – written (oral?) | |  |  |
| Library Workshop | |  |  |
| Literature Review | |  |  |
| Progress Report – Presentation | |  |  |
| Progress Report – Written | |  |  |
| Participation in group meetings | |  |  |
| Laboratory notebook/research log | |  |  |
| Written thesis – first draft | |  |  |
| Written thesis – final draft | |  |  |
| Oral Presentation | |  |  |
|  | |  | |

|  |  |
| --- | --- |
| **\*\*Description of Course Components** | Each of the components in listed the table above should be described here and any links to relevant forms or guides should be included. If the Department uses rubrics to evaluate any of these components, they may want to link to them here so that students can use these criteria and rankings as a learning tool to guide their best efforts. In addition to the component description, the Senate requires the following.  Required information for course components includes:   * any late submission policies; any missed lab or other missed work policies; * details on the assessment of any group work; * details on any participation mark; * any safety requirement   Typical course components of the thesis course may include: the research proposal; regular meetings with supervisor and/or group; a literature review; an annotated bibliography; the research work; progress reports; the thesis document; oral presentations; public presentation of the thesis. Points to consider when describing each component are provided below.  **Research Proposal**  The proposal is a summary of the research plan of study. If this is a required component of the course, students should be advised to seek supervisor feedback before submission of the proposal. The Department may want to make use of D2L for the course, as a place to store and make available to students well-constructed examples of (former student?) research proposals in the discipline. If the Department hosts an honours student orientation or information session on thesis writing, this should be announced in the course outline – and students can be told to expect more details at the session). Include an outline of what constitutes the sections of the research proposal with guidelines on length. For example:   * The “What” (What is the project – What is the goal – What are the objectives?) * the title of the thesis * a paragraph that includes a statement of the hypothesis/research question * a paragraph that describes the goal/objectives of the work * The “Why” (Why is this research important? - Why should this question be investigated?) * one or two pages describing the motivation/rationale/need for the project * The “How” (How are you going to meet your research objectives? What is your approach to the question or problem? What techniques of investigation or methods or of analysis do you plan to employ?) * a brief description of each of the methods * A proposed timeline that demonstrates some planning   **Meetings**  Meetings are a good way to help things stay on track, to promote discussion and conversation (as opposed to email contact), and to help students think more about the research process, rather than only the result. Make clear to students what their responsibility is towards meetings, preparation for any discussion, and scheduling. Mention if the responsibility lies with the student to schedule them, or if there is a regular meeting time. It is helpful to point out the purpose and value of any regular supervisor/group meetings. They can be an opportunity to review current literature, examine recent results, ask questions, and plan next steps. Meetings also provide a chance for the student to display insight and critical analysis of the material.  **Literature Review:**  Reading the current, relevant literature is critical to success in research. Some knowledge of what has been done previously in the selected area of research, including: discoveries, limits, method and equipment developments, is fundamental to the execution and progress of research and to the accomplishment of project goals. If a literature review is a required course component, a brief description is required. Some form of a literature review will most likely constitute a major portion of the final thesis introduction. There are plenty of online and print resources available to students and the Department might choose to highlight ones that meet the needs, expectations, style, and writing format of the program. Students can be directed to the [**online resources**](http://www.smu.ca/academics/library-guides.html)at the Library, which include “Writing a Literature Review” and “Writing an Annotated Bibliography”. Useful information to the student includes any minimum standard (number of references, number of pages) and instructions on format expected in your discipline.  **Research Work:**  Enrolment in the Honours Research Project usually provides the student with an opportunity to perform scientific research in a specialized setting (internal or external research laboratory, specialized instrumentation centre, field location, remote research or information centre) relating to your discipline. Access to these work environments is usually associated with a certain level of responsibility and privilege that should be made clear to the student. Any expectations relating to access, safety, ethics, or other applicable research protocol should be described or appropriately linked. These include, but are not limited to information on safety training, appropriate dress, appropriate behaviour, acceptable working hours and working conditions, room access, equipment operation, any chemicals or biomaterials handling, any required lab or log book keeping, and the book-keeping of any other relevant files or documents (e.g., instrument logs, room access logs, material safety data sheets (MSDS)). As outlined above, It is fair to students to let them know by way of the course outline – and perhaps in this section - that they are expected to maintain a steady level of work on their project over the span of the course, and what this might be for your discipline. Some Departments may choose to guide their students further by stating these expectations.  **Progress Report:**  Progress reports are a good way for the student to take stock of their work to date, reflect, organize, and seek feedback. If students are to report in some fashion on their progress to date, perhaps midterm in the course, then a description of what elements are required in this report is listed here. Please indicate if any or all of it is to be submitted in a written format and/or presented orally, and include any expectations on length and format. The Department may choose to organize a mini symposium of short presentations where the students can practice their public presentation. A progress report can include other course components already described (e.g. the research proposal, the literature review), a revised (if necessary) timeline, and a summary of their work to date including any challenges they have encountered and ways to overcome them.  **Thesis:**  It is very important that the student seek feedback from the supervisor on the content of any part of the draft thesis, especially on the flow and argument of the Results and Discussion sections. Please outline the sections of the thesis in the order in which they should appear in the document, according to the conventions of scholarly papers in your discipline. There are specific format rules the student must abide by, in order to have their completed thesis accepted at the Library Archives. The thesis must be submitted to the Library Archives. A template the thesis title page (and signature page), and abstract page are attached at the end of this course outline guideline document. The format rules and procedures for submission are found on the [Library Honours Thesis Information](http://www.smu.ca/webfiles/th027_honours_format_procedures.pdf) site.  You may want to provide a bullet list of any required parts of the thesis document.  For example:   * Signature page (Template available below) with original signatures of supervisor and reader(s) * Title page (Template available below) * Abstract page (Template available below) * Acknowledgements * Table of Contents * List of Symbols & Abbreviations (list them in alphabetical order, and as they appear in the text – i.e., do not automatically capitalize all symbols) * List of Figures (list the Figure#, the caption, and the page number where it appears in the thesis) * List of Tables (list the Table#, the caption, and the page number where it appears in the thesis) * Introduction. This section includes the literature review and finishes with at least one distinct paragraph that describes the aim of the research. * Experimental or Methods and Materials. Students are strongly encouraged to start writing this section early and contribute to it regularly when details of materials and procedures are fresh. * Results. If a separate Results section is used, it is important to simply report the results without interpretation, in a clear, logical, and concise manner. Clear presentation is critical in this section. Proper use of tables, schemes, and figures is extremely important. Examples of standard formats for tables or figures is useful and can be provided to the student. * Discussion. In this section, the results are interpreted; their implications discussed. The meaning of the results is explained and interpreted in the context of what is already known in the literature. * Conclusion. This is not a summary. This is a short, concise section which reports concluding statements and relates directly to the final paragraph of the introduction section (which states the aim of the work). The strengths and weaknesses of the overall project may also be assessed and reported here. * Future Work (if applicable). Ideas for meaningful, continued investigation may be reported here. Suggestions for further research are supported by statements of rationale. * References. Any formatting standards and styles should be provided to the students. * Appendices (if applicable). Appendices can be included so that any relevant large data lists accompany the thesis, but which do not need to fill the Results section of the body of the thesis.   The student is encouraged to follow the advice of the supervisor on the appropriate length of the written thesis. The page layout, including margins, font size and other formatting details including the use of copyrighted material, are [here](http://www.smu.ca/academics/archives/theses.html) from the Library’s website. The thesis should possess this format for all drafts and final copies. Archived, bound theses are **NOT** to be used as a guide for writing. These can be littered with mistakes and may not be in compliance with the current guidelines outlined by Saint Mary's University. A thesis with the incorrect format will not be accepted by the Library.  Indicate to the student what is included in the evaluation of the written thesis. This can take the form of an evaluation rubric, or a bullet list of criteria. Such criteria might include some of the following, for example:   * overall organization of ideas; * knowledge of the subject area; * use of discipline specific language; * quality of calculations and/or data treatment; * quality of interpretation and discussion of results; * completeness of experimental procedures reporting; * presentation, formatting, and style   **Public Presentation:**  The student is required to give a public presentation of the thesis work in a forum approved by the program. The presentation forms part of the student assessment. Please indicate the presentation format (poster/seminar/symposium) and any requirements relating to length of presentation, question period, etc. Describe the Department practice for the presentations and any details surrounding a question period. If the Department makes use of a rubric to evaluate the presentations, consider sharing it with students ahead of time, or make known to students on what criteria they are being specifically evaluated during the presentation. |
| ***Academic Integrity*** | The Department can include a link to the appropriate section of the Academic Calendar and state that students are encouraged to consult the Academic Integrity and Student Code of Conduct sections of the Academic Regulations in the Academic Calendar (provide the link) in order to be well informed on the consequences of dishonest behaviour. |

**A Note on Process.**

**Thesis and Final Grade Submission:**

The following aligns with the general instructions for Honours Thesis submission provided by the Library and which is available online under Library Guides. The Library contains important information on copyright material as it applies to theses.

* The final written thesis document (as deemed satisfactory by the Supervisor and Reader(s)) is submitted to the Department from the student, via email as a single PDF file.
  + It is emailed to the person who is **named on Banner** as the Instructor of record. For the thesis course, this is the Department Chair (or their designate), and cc’d to the Supervisor and Reader(s).
  + This PDF file of the thesis should include a **Title Page** but **NOT a Signature Page**.
* The Chair emails (cc student, Supervisor, and Reader(s)) the single PDF file of the thesis (with student A# in subject heading) to the Library Archives [theses@smu.ca](mailto:theses@smu.ca) who will make it available for full-text online viewing.
* Separately, a Signature Page is printed, completed, signed, and submitted to the Department Chair. The Chair forwards this original, completed Signature Page, along with any applicable original documentation (REB certificate, Restriction letter, Copyright letters, etc.) to the University Archives (3rd floor, Library).
* The Chair submits the thesis grade on Banner.

The following pages contain templates for Title Page and Signature Page.

**Complete Thesis Title: Long Titles Should Be Double-Spaced and**

**Divided at the Appropriate Place for Readability**

*by*

Student’s full name as it appears in official Saint Mary’s records

A Thesis Submitted to

Saint Mary’s University, Halifax, Nova Scotia

in Partial Fulfillment of the Requirements for the Degree of

Bachelor of Science with Honours in [subject]

[Month (of thesis submission), year], Halifax, Nova Scotia

Copyright © [student name, year]

**For the SIGNATURE PAGE:**

This page, with ORIGINAL signatures (not a photocopy) is referred to as a **Signature Page.**

It must be submitted (as a separate sheet) to the Department when the student submits thesis.

**Use this page as a template and delete this box.**

**For the TITLE PAGE:**

This page WITHOUT the signatures is referred to as the **Title Page.** It becomes the front page of the thesis PDF file that the student submits to Instructor/Chair

**Use this page as a template and delete this box.**

Approved: [Supervisor’s Name, Title]

[Supervisor signature]

Approved: [Reader’s Name, Title]

[Reader’s signature]

Date: [Date thesis approved]

**Complete Thesis Title: Long Titles Should Be Double-Spaced and**

**Divided at the Appropriate Place for Readability**

*by*

Student’s full name as it appears in official Saint Mary’s records

**Abstract**

[MUST be 300 words maximum, and single-spaced. Start on this page.]

**For the ABSTRACT PAGE:**

This page, with the abstract typed on it, is referred to as the **Abstract Page**.

**Use this page as a template and delete this box.**

Date: of thesis submission.