

PHYD01H3 – Winter 2023

Research Project in Physics and Astrophysics

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Office Hours: By appointment

Course Description

Introduces students to current research in physics or astrophysics under the supervision of a professorial faculty member. Students undertake an independent project that can be of a theoretical, computational or experimental nature. Evaluation is by the supervising faculty member in consultation with the course supervisor. Students must obtain consent of the course supervisor to enroll in this course.

Course Evaluation

Written proposal:	20%
Progress report:	15%
Final report:	35%
Final presentation:	30%

The proposal and reports should be emailed directly to the supervisor. The course coordinator should be CC'ed on the email to enable them to keep a record of student progress and work.

Additional details about these evaluations are found later in this document.

Students are evaluated on a letter-grade basis. These grades will map onto the middle of the range used by University of Toronto Scarborough ([link](#)) as follows:

Grade	UTSC percentage range	Grade
A+	90 – 100%	95%

Course Expectations

Students should learn about all aspects of conducting the research from the supervisor. Students will be asked to submit work to the supervisor, i.e., the proposal, progress report, and final report. The course coordinator must also be sent a copy of this work for their records. The student will present their project to their supervisor, the course coordinator, as well as other faculty and students at the end of the term.

Students will spend as much time as necessary do to the research properly. However, UTSC regulations impose a limit of approximately six hours per week for the project. This aligns with a standard course that has three hours per week of class time plus a few hours for readings and homework.

Undergraduate research projects are expected to involve independent research, enabling academic accountability and evaluation of the work of each student. When more than one student is involved in a project, the roles of each student should be clearly specified in the

Course components

The research for the project should be conducted during the term of study.

Written proposal

The research proposal is the first major component of the independent research course. This document should:

- Describe the topic and the motivation for the research.
 - Why is this a good area for study? What is its significance? What problems does it solve or contribute to solving?
- Make connections between the proposed research and the existing literature. This should include properly cited references.
- Identify the specific question(s) the research project will answer or explore.
- Specify what methods or techniques you will use to carry out the research.
 - This should make clear whether you have an understanding of these techniques and seek to apply them or if you are also developing these skills.
- Create benchmarks for accomplishing the intended work, e.g., set out an expected timeline for the term.
- Identify anticipated challenges and a strategy for overcoming them. Ensure the plan is achievable.
- **Be clear about the outcomes of the project: what are the goals and objectives?**

The document should be clear, concise, and focus on the major themes. 3 – 5 pages should suffice. Use 12 point font, single line spacing, and 2 cm page margins.

Due on the last day of January.

Progress update

A short progress update must be emailed to supervisor (copy the course coordinator). This update should be a minimum of half a page long and a maximum of one page.

This update should include:

- the goal of the project,
- brief summary of the work done so far,
- expected challenges, and
- a general plan for the next month.

The progress update will be an opportunity for students to reflect on their progress and challenges, prompt feedback from the supervisor, and update the course coordinator.

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Final report

Student must produce a substantive written report containing significant analysis and interpretation of a previously approved topic.

Final presentation

Every student will present their work to other students and members of the physics and astronomy faculty at the end of course. At least one faculty member other than the supervisor

Relevant U of T Policies

Academic Integrity

The University treats cases of cheating and plagiarism very seriously. The University of Toronto's Code of Behaviour on Academic Matters outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences.

Details: