

PHYS 3P91

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PHYS 3P91 - Experimental Physics I

Course outline

Instructor: [E. Sternin](#)

– About this course

This is an advanced experimental laboratory course, 13 weeks in duration, four hours per week. Normally, six lab reports are completed, some involving several weeks of experiments.

– Topics to be covered

This is an approximate list; some of the experiments are conducted on research-grade equipment which may not always be available for student use. Some of the experiments listed below may not be offered this year, and others may be added to the list.

- » **Preparation of a thin film of Bismuth** (H303B)
- » **Resistivity and Hall effect measurements on a thin film of Bismuth** (H300A)
- » **Gamma-ray scintillation spectroscopy and the Compton effect** (H308)
- » **Energy-dispersive X-ray diffraction** (H305B)
- » **Planck's constant measurement I (black-body radiation)** (H308)
- » **Planck's constant measurement II (photoelectric effect)** (H308)
- » **Electron diffraction** (H300)
- » **Raman spectroscopy** (H300A)

– Grading and the grading scheme

Completing all experiments and submitting all lab reports is required to pass the course. Lab marks contribute a total of 75% to the final grade. Late submissions have a sinking cap of 15%/day, unless medical documentation is provided. See the Medical Exemption Policy and the medical health certificate at the Registrar's Website at [this link](#).

There is a two-part final exam in the course:

- » an oral exam worth 15% of the final mark, during which the student has access only to his/her lab book and reports and may be required to provide detailed explanations of the operating procedures and/or of the operation of the equipment in any of the experiments; and
- » a written submission, due by noon on the last day of classes and worth 10% of the final mark, that is a re-write of one of the lab reports into a formal article manuscript, acceptable in format to *Phys. Rev.* Students are encouraged to bear this in mind during the labs, and to take extensive notes that could later be used for such final written submissions.

Maintaining safe and tidy workspace in the laboratory is required, and a failure to do so will result in an immediate involuntary withdrawal from the course. A passing grade in the course is conditional on maintaining safe laboratory practices, and on the final clean-up of the laboratory workspace at the end of the term, to the satisfaction of the instructor.

– Costs

See the [Campus Store](#) for textbook costs, if any.

This course requires an ancillary fee of \$10 to cover Lab consumables/Printing Fee expenses.

– Academic Integrity

Academic misconduct is a serious offence. The principle of academic integrity, particularly of doing one's own work, documenting properly (including use of quotation marks, appropriate paraphrasing and referencing/citation), collaborating appropriately, and avoiding misrepresentation, is a core principle in university study. Students should consult "[Academic Misconduct](#)" section in the Undergraduate Calendar to view a fuller description of prohibited actions, and the procedures and penalties. The University takes academic misconduct extremely seriously and will follow its strict procedures to the letter in all cases.

A helpful website explains Brock's [Academic Integrity Policy](#). Please consult it, as all students are expected to know and abide by its provisions.

Courses may use [turnitin.com](https://www.turnitin.com), a phrase-matching software, to verify originality of your submitted lab reports and written assignments. If you object to uploading your assignments to [turnitin.com](https://www.turnitin.com) for any reason, please notify the instructor to discuss alternative submissions.

Be aware that it is the policy of the Department of Physics that any academic misconduct including (but not limited to) possessing, using or accessing unauthorized material in any form (including online) during final exams or assessments will *automatically* result in zero grade for the exam. Since most courses require a minimum passing grade on the final exam to complete the course, this will likely lead to a failure in the course.

FMS Penalties for Academic Misconduct

Unless otherwise specified, the Department of Physics follows the following minimum penalty guidelines for cases of academic misconduct in the Faculty of Mathematics and Science (FMS). Please be aware that the Associate Dean, Undergraduate Programs, may assign different penalties than those listed here, depending on the details of individual cases. Also note that cheating on exams carries significantly higher penalties.

First offence:

Zero grade on the assignment, additional penalty of 100% of the weight of the assignment to be subtracted from the final grade, mandatory completion of the AZLS Academic Integrity workshop

Second offence:

Zero grade on assignment, additional penalty of 100% of the weight of the assignment to be subtracted from the final grade, 4-month suspension

Third or additional offence:

Zero grade in the course, 1-year suspension, permanent removal from major program.

FMS Penalties for Misconduct in Final Exams

First Offense:

Zero grade in the course.

Second Offense:

Zero grade in the course, 4 month suspension.

Third Offense:

Zero grade in the course, 1 year suspension, permanent removal from major program

Fourth Offense:

Permanent Suspension, debarment.

- FMS Academic Policies

Intellectual Property Notice

All slides, presentations, handouts, tests, exams, and other course materials created by the instructor in this course are the intellectual property of the instructor. A student who publicly posts or sells an instructor's work, without the instructor's express consent, may be charged with misconduct under Brock's Academic Integrity Policy and/or Code of Conduct, and may also face adverse legal consequences for infringement of intellectual property rights.

Use of Generative AI (GenAI)

In the age of GenAI (e.g., ChatGPT), our expectation of you remains the same as it ever was: original academic work, following the instructions of the assignment determined by the instructor for this course for requirements, expectations, and parameters for completion and submission of your work for grading. Therefore, the use of GenAI tools and GenAI-generated content is not allowed (unless explicitly requested/instructed) as a resource or source for answers and discussion in submitted work. Unauthorized use of GenAI will be treated as an academic misconduct.

You probably won't find much use of GenAI in this course anyway, even when writing something like a lab report. Why? GenAI doesn't know what you did in the lab. GenAI may know a lot about the overall idea you were studying, but not how you demonstrated it. In your lab reports, your answers and discussion need to relate to what you did and the data you took.

Important dates

Please be aware of all the important dates, such as the first/last days of classes, snow days and reading week, as well as the deadline for withdrawal without academic penalty. For the current academic term, this information can be found [here](#).

Relationship between attendance and grades

Unless the instructor announces otherwise, students are expected to attend all lectures, discussion groups, seminars, laboratory periods and examinations of the courses in which they are registered and must submit all assignments in order to pass this course.

Accommodations

The University is committed to fostering an inclusive and supportive environment for all students and will adhere

to the Human Rights principles that ensure respect for dignity, individualized accommodation, inclusion and full participation. The University provides a wide range of resources to assist students, as follows:

- a. If you require academic accommodation because of a disability or an ongoing health or mental health condition, please contact Student Accessibility Services at askSAS@brocku.ca or 905 688 5550 ext. 3240.
- b. **Medical Self-Declaration Forms** (brief absence up to 72 hours)

In the case of a short-term medical circumstance, if a student wishes to seek an academic consideration, please use the [Medical Self-Declaration Form](#). The request is to be made in good faith by the student requesting the academic consideration due to a short-term condition that impacts their academic activities (e.g., participation in academic classes, delay in assignments, etc.). The period of this short-term medical condition for academic consideration must fall within a 72-hour (3 day) period. The form must be submitted to the instructor either during your brief absence or if you are too unwell, within 24 hours of the end of your 3 day brief absence.

Medical Verification Form (extended duration)

In cases where a student requests academic consideration due to a medical circumstance that exceeds 72 hours (three days) and will impact their academic activities (e.g., participation in academic classes, delay in assignments, etc.), or in the case of a final exam deferral, the [medical verification form](#) must be signed by the student and the health professional as per process set out in the [Faculty Handbook III:9.4.1](#).

- c. If you are experiencing mental health concerns, contact the Student Wellness and Accessibility Centre. [Good2Talk](#) is a service specifically for post-secondary students, available 24/7, 365 days a year, and provides anonymous assistance. Follow the above link or call 1-866-925-5454. For information on wellness, coping and resiliency, visit: [Brock University \(Mental Health\)](#).
- d. If you require academic accommodation on religious grounds, you should make a formal, written request to your instructor(s) for alternative dates and/or means of satisfying requirements. Such requests should be made during the first two weeks of any given academic term, or as soon as possible after a need for accommodation is known to exist.
- e. If you have been affected by sexual violence, the Human Rights & Equity Office offers support, information, reasonable accommodations, and resources through the Sexual Violence Support & Education Coordinator. For information on sexual violence, visit [Brock's Sexual Assault and Harassment Policy](#) or contact the Sexual Violence Support & Response Coordinator at humanrights@brocku.ca or 905 688 5550 ext. 4387.
- f. If you have experienced discrimination or harassment on any of the above grounds, including racial, gender or other forms of discrimination, contact the Human Rights and Equity Office at humanrights@brocku.ca.

For a full description of academic policies in the Faculty of Mathematics and Science, consult brocku.ca/mathematics-science/