Physics 4931B
Special Topics: Advanced Physics Projects
Course Information – Winter 2017

Calendar Description
Physics 4931G student will work on a research project in advanced experimental, theoretical or computational physics under faculty supervision. It is intended to provide students with more experience in the design and construction of physics experiments, measurement techniques, programming, and data analysis.

Prerequisites: Physics 2910G.
Requirements: Average of 72% in Physics 2101A, 2110B and 2910F.
Note: this project should be distinctly different from the Physics 4999E Honour Research Projects.
6 hours, 0.5 course.

Instructor: Dr. Lyudmila Goncharova
email: lgonchar@uwo.ca
Phone: 519-661-2111 ext. 81558
Office: PAB 231
Office hours: by appointment lgonchar@uwo.ca

Course website: OWL site for this course: https://owl.uwo.ca/portal

Class times: MW 2:30-5:30, and by arrangements with the supervisor

Introduction
The main goals of this course are to:

- develop your experimental skills beyond the level of Phys 2910G;
- develop your ability to design and build experimental apparatus
- provide advanced training in computerized data acquisition and analysis
- improve your skills in preparing and presenting research reports in a variety of formats

Expectations. The minimum requirements for this course are:
1) 6 hours/week throughout the 13 weeks in the term working on your research project under the direction of your assigned supervisor. Please note that the end of Reading Week (February 24, 2017) marks the end of your training period. This is to allow enough time to do your independent project and to write methodology section. One page project proposal should be submitted by January 13, 2017 to be approved jointly by the supervisor and Dr. Goncharova.

2) Attendance of P4931G events listed below. Participation in each is required for course credit.

Initiation meeting: Monday, January 9, 2017 2:30-5:30, PAB 130.
If you have a conflict with other courses during these hours, please contact me immediately and we can try to work out an alternative schedule.
Poster presentations at March 9, 2019, PhUNC event.
Evaluation
Your final grade in this course will be calculated according to:

<table>
<thead>
<tr>
<th>Evaluation Points</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Lab notebook</td>
<td>10%</td>
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<tr>
<td>Mid-term evaluation by supervisor</td>
<td>10%</td>
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<tr>
<td>Mid-term submission of methodology section</td>
<td>20%</td>
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<tr>
<td>Project implementation (Research performance grade by supervisor)</td>
<td>30%</td>
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<tr>
<td>Final project presentation and PhUNC poster presentation</td>
<td>30%</td>
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Lab notebook:
All students are required to keep a record of their work in laboratory notebooks. The purpose of the laboratory record is to have a sufficiently detailed record of your experiments that someone else could reconstruct exactly what you did. This is essential in case you – or someone else– have to check or repeat your measurements in the future. In a research laboratory, whether academic or industrial, laboratory notebooks are legal documents that can be important for establishing priority, obtaining patents, etc.

Lab notebooks will be checked and signed by the supervisor and will be periodically checked by your course instructor during the term to ensure that they are being properly kept.

Project design and implementation (Evaluation by supervisor):
One-page project proposal should be submitted by January 13, 2017 to be approved jointly by the supervisor and Dr. Goncharova. A large fraction of your mark for this course will be based on an experimental project that you will design, build, and carry out in the second half of the term. If you work on computation project, it will be a new code or a new module that goes to the existing code that you will develop on your own. The only major constraint is time: you need to finish your project by the end of term.

A large part of your grade will be based on our observations of your research skills and effectiveness in the lab settings. It will be done by your supervisor and will consists of the midterm evaluation (10%) and project implementation evaluation (30%). It is expected that you will be working in a research group settings and get training in the relevant research skills during the first 6 weeks. By the end of reading week (February 24, 2017), your training period will be over and you start working on the design and implementation of your project.

Mid-term submission of methodology section:
Methodology session will be evaluated by your course coordinator. It will be submitted in late March; more instructions will be provided later.

PhUNC poster presentation: your project progress will be presented at March 9th, 2017. PhUNC.
http://www.physics.uwo.ca/undergraduate/current_students/PASA.html

Final Presentation: In addition to your written reports, you will be required to make a final oral presentation describing your project. All presentations will be presented on April 5, 2017 (the last scheduled class) in conjunction with the Phys 3900 class. You will also be required to explain your research project to the instructor and TAs, and answer questions about them.

Safety and Security
- Some of the experiments may involve lasers, radioactive materials or chemical. If you do not have
a recent WHMIS certification from Western, you will also need to complete this via OWL. In addition, your supervisor will provide group-specific safety training. Please hand your signed Certificate of Completions to your supervisor.

- No food or drink is permitted in the experimental laboratory under any circumstances.
- Never remove equipment from the lab or allow anyone else to do so without permission from the faculty.

**Medical or other documented issues**

If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to the Dean's office as soon as possible and contact your instructor immediately. It is the student's responsibility to make alternative arrangements with their instructor once the accommodation has been approved and the instructor has been informed. In the event of a missed final exam, a "Recommendation of Special Examination" form must be obtained from the Dean's Office immediately. For further information please see:


A student requiring academic accommodation due to illness should use the Student Medical Certificate when visiting an off-campus medical facility or request a Records Release Form (located in the Dean's Office) for visits to Student Health Services. The form can be found here:

https://studentservices.uwo.ca/secure/medical_document.pdf

**Cheating**

University policy states that cheating is a scholastic offence. The commission of a scholastic offence is attended by academic penalty, which may include expulsion from the program. If you are caught cheating, there will be no second warning. Cheating includes having available any other electronic devices than a watch and a calculator during a test or exam. You may not have a cell phone accessible, even to use it as a calculator or watch. Complete information on the University policy on academic offenses can be found at

http://www.uwo.ca/univsec/handbook/appeals/scholastic_discipline_undergrad.pdf

**Plagiarism**

Students must write their lab reports, tests and final exam in their own words. Whenever students take an idea, or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence (see Scholastic Offence Policy in the Western Academic Calendar).

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (http://www.turnitin.com).

**Complaints and Suggestions**

If you have a concern about something, please let us know. We rely on your feedback. Please contact initially the person most directly concerned; this will usually be your course instructor. If that is not satisfactory, or if there is something more general bothering you, talk it over with the Physics and Astronomy Department Chair or the Associate Chair of Undergraduate Studies (for contact information see http://www.physics.uwo.ca).

**Accessibility**

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x 82147 for any specific question regarding an accommodation.
Help
Students who are in emotional or mental distress should refer to Mental Health@Western http://www.uwo.ca/uwocom/mentalhealth/ for a complete list of options about how to obtain help.

Contacting Us
The simplest way to contact us outside of lectures is via your UWO e-mail account. Please allow 3–5 working days for a response.