

Physics 495—Thesis
Course Description, Fall 2015

Instructor: Andrew Dougherty
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Class Meetings: We will normally meet either Tuesday or Thursday afternoon, and other times throughout the week as needed. Students are expected to engage in significant independent work as well.

The student work in this course is in full compliance with the federal definition of a four credit hour course. Please see the Registrar's Office web site <http://registrar.lafayette.edu/additional-resources/cep-course-proposal/> for the full policy and practice statement.

Office Hours: I will usually be either in my office or lab during the free times indicated on my schedule. Please feel free to call, e-mail, or stop by at any time and ask a question or set up an appointment.

Classes on Snow Days and Other Emergencies: If I am unable to make it to class, I will leave a message on my voice mail (610-330-5212).

Description: Thesis is an opportunity for highly motivated students to pursue independent, in-depth research into a physics topic in which they have great interest. It may evolve from, and extend, work performed as an EXCEL Scholar, or it may be a self-contained project. The student will conduct reading from the professional literature to determine what related work has been done elsewhere in the past and to learn the context into which the project fits. If the thesis is experimental in nature, data will be collected using appropriate apparatus or from external sources made available by the research mentor. If it is theoretical, the necessary mathematics and computer programming will be worked out. Detailed analysis will be performed, and the results will be written up in the style of professional journals.

Learning Outcomes: After completing a thesis, students should be able to:

- Display a deep understanding of the physics involved;
- Be able to conduct independent research under the supervision of an expert;
- Be able to explain the context in which the research was conducted;
- Be able to explain in writing the methods employed and the results obtained;
- Be able to present the background, methods and results to an audience of physics faculty and students.

Prerequisites: You must meet the GPA requirements established by the Faculty of Lafayette College. Appropriate coursework in physics, as determined by your mentor, must have been completed. In order to continue in Phys 496, a grade of "A" must be earned in Physics 495.

Requirements:

For Phys 495: A student must demonstrate satisfactory progress towards the completion of a thesis. Normally, this will include performing much of the background research and reading, submitting a draft of at least one of the chapters (often the introduction or background) for the thesis, and giving a public presentation at the end of the semester on the work done so far. Depending on the nature of the project, the student and mentor may set different milestones, as appropriate.

For Phys 496: A satisfactory thesis must be completed and approved by a committee consisting of at least 2 readers from the Physics Department plus one reader from another department. The thesis must be satisfactorily defended in an oral presentation open to all Physics Department faculty, the outside reader and any other interested persons, followed by a question and response session with the physics faculty and the outside reader.

My Schedule:

Andrew Dougherty Fall 2015 Office: Hugel Science Center 030 Lab: Hugel Science Center 025 610-330-5212 doughera@lafayette.edu					
Time	Mon.	Tues.	Wed.	Thurs.	Fri.
8:00 8:30					
9:00 9:30		Phys 131 Lab HSC 119			
10:00 10:30	<i>prep</i>		<i>prep</i>	<i>prep</i>	
11:00 11:30	Phys 131 HSC 142		Phys 131 HSC 142		Phys 131 HSC 142
12:00 12:30					<i>Physics Club</i>
1:00 1:30					
2:00 2:30		<i>Office Hours</i>	<i>Office Hours</i>		
3:00 3:30					
4:00 4:30	Department Meeting	Committee Meeting	<i>Physics Club</i>		