2014

398 Physics Thesis

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PHYS398 – Physics Thesis  
Common Syllabus

Course Description and Goals

The Physics Thesis (PHYS398) course is a capstone experiences designed to give students an opportunity of presenting their results from an independent and creative exploration of a topic in physics (typically performed during the Physics Research course – PHYS395).

Common Meetings

All students enrolled in PHYS398 are required to attend three Common Meetings during the spring semester. Meetings will be scheduled during the normal class time (Wednesday 3:00 – 4:00), and the dates and locations will be e-mailed to students at the beginning of the semester.

Course Components

Research paper – students will work on a research paper throughout the semester. The paper should be written in the style of an American Journal of Physics Article. Specific deadlines for completed drafts of specific sections and the final paper will be set during the first common meeting. Missed deadlines will result in the lowering of the grade.

Research talk – students will present a short talk (10 – 15 minutes) during the department’s Senior Research Seminar. Students will be notified of the date and time of the seminar early in the semester. Each faculty member attending the talk will fill out an assessment form that will be used to provide feedback to both student and faculty advisor.

Research poster – students will present a poster at Xavier’s Celebration of Student Research and Creative Activity (usually held in April). Students will receive a formal invitation to present at this event during the semester, and must submit an abstract of their work as instructed in the invitation. Each physics faculty member will fill out an assessment form based on the poster content and quality of the presentation that will be used to provide feedback to both student and faculty advisor.
Grading

The following rubric serves to determine a student’s grade for the course:

Part I

Talk

<table>
<thead>
<tr>
<th>Submitted materials to advisor for review prior to presentation. Made appropriate corrections in final presentation.</th>
<th>Submitted materials to advisor for review prior to presentation. Did not make appropriate corrections in final presentation.</th>
<th>Did not submit materials to advisor prior to presentation. Presented the talk as scheduled.</th>
<th>Did not present a talk, and no valid excuse was given, but showed evidence of doing work on presentation.</th>
<th>Provides no evidence of work.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
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Poster

<table>
<thead>
<tr>
<th>Submitted materials to advisor for review prior to presentation. Made appropriate corrections in final presentation.</th>
<th>Submitted materials to advisor for review prior to presentation. Did not make appropriate corrections in final presentation.</th>
<th>Did not submit materials to advisor at least two days prior to presentation. Presented the talk as scheduled.</th>
<th>Did not present a talk, and no valid excuse was given, but showed evidence of work done on talk.</th>
<th>Provides no evidence of work.</th>
</tr>
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<tbody>
<tr>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
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</table>

Paper - drafts

<table>
<thead>
<tr>
<th>Met both draft deadlines. Made appropriate corrections in final manuscript.</th>
<th>Met both draft deadlines, but did not make appropriate corrections in final manuscript.</th>
<th>Met one draft deadline. Made appropriate corrections in final manuscript.</th>
<th>Met one draft deadline, but did not make appropriate corrections in final manuscript.</th>
<th>Did not meet either draft deadline.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
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Paper

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<tr>
<th>Submitted final draft to advisor for review prior to final deadline. Made appropriate corrections in final manuscript.</th>
<th>Submitted final draft to advisor for review prior to final deadline. Did not make appropriate corrections in final manuscript.</th>
<th>Submitted a manuscript after deadline, but before end of final’s week.</th>
<th>Failed to turn in final manuscript by the end of final’s week, but showed evidence of work done.</th>
<th>Provides no evidence of work.</th>
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</thead>
<tbody>
<tr>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
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Part II – Quality points based on quality of work, displayed dedication to project, and professionalism displayed throughout the semester: 0 – 10 points at the discretion of advisor.

TOTAL: _______________________

24 – 30 A
18 – 23 B
12 – 18 C
6 – 11 D
Assessment

This course serves to assess the Department of Physics Student Learning Outcomes. As such, a student’s grade is determined by how well they:

1) Display professionalism by being punctual to class and scheduled meetings, submitting neat and complete work by the stated deadlines, and conducting themselves in a mature and respectful manner while giving a talk or presenting a poster in a formal setting;
2) Demonstrate a working knowledge of the basic concepts and theories of physics;
3) Display critical thinking skills, especially those skills required for the analysis and synthesis of knowledge pertaining to the physical universe;
4) Demonstrate technical proficiency in the principles and techniques of theoretical and experimental physics; i.e. be well prepared for graduate study in physics or other scientific or technical fields;
5) Display abilities useful for carrying out independent investigation and originality of thought; i.e. develop creative thinking skills necessary for effectively combining knowledge obtained from differing fields and disciplines;
6) Display effective oral and written communication skills especially with regards to communicating scientific theories and models, data, results, outcomes, and proposals.