

<b>Fiscal Unit/Academic Org</b>	Physics - D0684
<b>Administering College/Academic Group</b>	Mathematical And Physical Sci
<b>Co-administering College/Academic Group</b>	
<b>Semester Conversion Designation</b>	New Program/Plan
<b>Proposed Program/Plan Name</b>	Physics BS/MS
<b>Type of Program/Plan</b>	Combined program (e.g. BS/MS, Ph.D./MD)
<b>Program/Plan Code Abbreviation</b>	PHYSICS
<b>Proposed Degree Title</b>	Physics BS/MS

## Credit Hour Explanation

Program credit hour requirements		A) Number of credit hours in current program (Quarter credit hours)	B) Calculated result for 2/3rds of current (Semester credit hours)	C) Number of credit hours required for proposed program (Semester credit hours)	D) Change in credit hours
Total minimum credit hours required for completion of program				33	
Required credit hours offered by the unit	Minimum			27	
	Maximum			33	
Required credit hours offered outside of the unit	Minimum			0	
	Maximum			0	
Required prerequisite credit hours not included above	Minimum			0	
	Maximum			0	

## Program Learning Goals

Note: these are required for all undergraduate degree programs and majors now, and will be required for all graduate and professional degree programs in 2012. Nonetheless, all programs are encouraged to complete these now.

### Program Learning Goals

## Assessment

Assessment plan includes student learning goals, how those goals are evaluated, and how the information collected is used to improve student learning. An assessment plan is required for undergraduate majors and degrees. Graduate and professional degree programs are encouraged to complete this now, but will not be required to do so until 2012.

Is this a degree program (undergraduate, graduate, or professional) or major proposal? Yes

Does the degree program or major have an assessment plan on file with the university Office of Academic Affairs? No

A full assessment plan has been submitting using the survey form

## Program Specializations/Sub-Plans

If you do not specify a program specialization/sub-plan it will be assumed you are submitting this program for all program specializations/sub-plans.

## Pre-Major

Does this Program have a Pre-Major? No

**Attachments**

- BsMsProgramProposalFeb15.pdf: proposal

*(Program Proposal. Owner: Hughes,Richard E)*

**Comments****Workflow Information**


Status	User(s)	Date/Time	Step
Submitted	Hughes,Richard E	02/15/2011 07:59 AM	Submitted for Approval
Approved	Hughes,Richard E	02/15/2011 07:59 AM	Unit Approval
Pending Approval	Andereck,Claude David	02/15/2011 08:00 AM	College Approval



**Department of Physics**

Office of the Chair  
191 West Woodruff Avenue  
Columbus, OH 43210-1117

Phone (614) 292-2653  
Fax (614) 292-7557

To: Office of Academic Affairs  
From: James J. Beatty, Chair, Department of Physics   
Date: February 14, 2011  
Re: Semester Program Proposal for Combined BS/MS Program

The Physics department has the following programs which will be converted from quarters to semesters:

- 1) The Undergraduate Engineering Physics Major
- 2) The Undergraduate Physics Major
- 3) The Undergraduate Physics Minor
- 4) The Combined Physics BS/MS
- 5) The Graduate Physics PhD

The subject of this proposal is the Physics combined BS/MS program; the other programs are addressed in separate proposals.

The Undergraduate and Graduate Studies Committees of the Department of Physics have worked hard to produce this proposal, describing the conversion of our current combined BS/MS program from the quarter system to the semester system.

The contents of this proposal have been discussed at length in a variety of Undergraduate and Graduate Studies Committee meetings as well as faculty meetings through the 2009-2010 academic year.

A vote on this proposal was taken on February 11, 2011. The outcome of the vote was 37 in favor, 0 opposed. As Chair of this department, I strongly endorse this proposal.

## **The Physics BS/MS Program Under Semesters**

### **Rationale for Changes to the Combined BS/MS Physics Program from quarters to semesters**

There are no significant changes to the Physics BS/MS Program under semesters, compared to the present program under quarters.

### **BS/MS in Physics program under semesters**

#### **i) General information**

The masters portion for the BS/MS degree is not fixed, but is planned by the student and a member of the Graduate Faculty who acts as an advisor to meet the student's individual needs and interests. (BS/MS Students must have an identified faculty advisor prior to acceptance into the BS/MS program.) Each candidate for the master's degree must fulfill all Graduate School requirements for that degree. The student should become familiar with the current requirements and the order in which they must be fulfilled.

#### **ii) Summary and comparison to the program under quarters**

##### **a) Program under quarters**

1) Minimum GPA of 3.0 (B average) in all required courses. The required courses include:

- a) 2 physics courses at the 800-level
- b) 3 Physics courses at the 600-level or above
- c) 2 other courses at the graduate level (not necessarily in Physics, but approved by the program advisors)

The total hours in the above required courses ranges from 26-28 quarter-hours.

b) Up to 20 quarter-credit hours may be double counted for both the BS and MS degrees.

3) A minimum of 14 quarter-credit hours of research.

4) A minimum of 50 quarter-credit hours total.

5) A written report and final oral examination.

##### **b) Program under semesters**

1) Minimum GPA of 3.0 (B average) in all required courses. The required courses include:

- a) 1 physics course at the 7000-level or above
- b) 2 Physics courses at the 5000-level or above
- c) 2 other courses at the graduate level (not necessarily in Physics, but approved by the program advisors)

The total hours in the above required courses ranges from 15-19 semester-credit hours.

2) Up to 12 credit hours may be double counted for both the BS and MS degrees.

3) A minimum of 10 semester-credit hours of research.

4) A minimum of 33 semester-credit hours total.

5) A written report and final oral examination.

**iii) Semester BS/MS Program Requirements - Details**

a) All students together with their advisor will be responsible for the development of a program of course work and research appropriate to her/his background, abilities, and goals.

b) All students must take a minimum of 33 semester hours of graduate credit, including the following coursework and research.

(1) All students must complete at least 1 Physics course at the 7000-level or above, and two courses at the 5000-level or above. Students also are required to take a minimum of 2 additional graduate level courses. These additional courses do not need to be in the Physics department, but must be chosen in consultation with the students faculty advisor and must be approved by the BS/MS program advisor (typically the Vice Chair for Graduate studies or his/her designate). All students must maintain a GPA of 3.0 in these courses.

(2) A maximum of 12 semester credit hours may be double counted for both the BS and MS programs. The students are expected to work with advisors from both the Undergraduate and Graduate Physics programs to ensure that the courses chosen for double counting in fact satisfy the requirements for both programs. These could be 5000-level or above Physics courses.

(3) Students must complete a minimum of 10 semester-hours of research credit (normally satisfied by Physics 7998 or 8998).

c) Students must present a written report which along with their above research hours demonstrates competence in individual research.

d) All students must pass a Final Oral Examination. The oral portion of the Master's Examination is held after the submission for approval of the final written report and in the semester the student expects to graduate. An "Application to Graduate" form must be filed with the Graduate School by the appropriate deadline for that semester. The oral examination will be at least one hour in length. It will be conducted by a committee composed of the candidate's advisor (chairperson) and at least one other member of the graduate faculty. The chairperson of the examining committee is responsible for arranging the examination and for certifying its results to the Graduate School and to the departmental Graduate Studies Committee. (There is a form for the report to the Graduate School.) The report of a two-person committee must be unanimous in order to be considered satisfactory. The certification to the Graduate School of the successful completion of the requirements for the BS/MS program shall be made by the student's advisor and the Vice Chair for Graduate Studies and Research. A candidate who fails this examination must register in the Graduate School and continue work for an additional semester before an opportunity will be given for a second examination. No student will be permitted a third examination.

## **Transition Policy**

Students who began their degree under quarters will not be penalized as we move to semesters, either in terms of progress towards their degree or their expected date of graduation.

Students enrolled in this program will need to separately satisfy both the BS requirements (listed elsewhere) and MS requirements (listed in this document). A detailed semester transition plan is available for the BS program.

Most BS/MS students should be able to finish this program with one additional year of study beyond that required to finish their BS program. The **overall** credit requirements of the MS part of the BS/MS program are the same under quarters or semesters (33 hours under semesters vs 50 hours under quarters). The requirements are slightly reduced for semesters relative to quarters in the two broad categories of course hours and research hours, and so it is slightly easier for students to graduate under semester requirements.

Students who begin the master portion of their study under quarters but finish under semesters will use the following guidelines:

- 1) Students will be allowed to graduate under fully quarter requirements or fully semester requirements, with the standard conversion of 1 quarter hour of credit being equal to (2/3) semester hour of credit.
- 2) 7000-level courses under semesters will count as 800-level courses under quarters and vice versa. Same for 6000-level semester courses and 700-level quarter courses, as well as 5000-level semester courses and 600-level quarter courses.
- 3) The minimum required coursework hours will be 26 quarter hours for graduating under quarter requirements, and 15 semester hours for graduating under semester requirements.
- 4) The minimum required research hours will be 14 quarter hours for graduating under quarter requirements, and 10 semester hours for graduating under semester requirements.

Students who begin the masters portion of their study under semesters can only graduate under fully semester requirements.

As this program is quite new (started in academic year 2010) with a very small expected number of students (less than 5 per year), we expect to provide substantial one-on-one advising help to any students enrolled in this program during the transition from semesters to quarters. In addition, as part of the admission requirements to the program, students are required to have identified a willing faculty advisor. This advisor, along with the Undergraduate and Graduate Vice Chairs, will ensure that students in this program receive appropriate guidance towards finishing both the BS and Masters programs.

**BS/MS sample program under semesters**

Year	Autumn Semester	Credit hours	Comment		Spring Semester	Credit hours	Comment
1	Physics 1250H	5	Honors Intro		Physics 1251H	5	Honors Intro
	Math 1251	5	Calc		Math 1252	5	Calc
	GEC	3	GEC #1		Bio 1113	4	GEC #2
	CSE 1222	2	Prereq				
	<b>Semester Sum</b>	<b>15</b>			<b>Semester Sum</b>	<b>14</b>	
2	Physics 2300	4	26x conv		Physics 2301	4	26x conv
	Physics 2095	1	Survey		Physics 3700	3	Data Ana Lab
	Math 2253	3	GEC #3		Math 2431	3	GEC #5
	GEC Lang 1	4	GEC Lang		GEC Lang 2	4	GEC Lang
	GEC	3	GEC #4		GEC	3	GEC #6
	<b>Semester Sum</b>	<b>15</b>			<b>Semester Sum</b>	<b>17</b>	
3	Physics 5500H	4	Quantum		Physics 5501H	4	Quantum
	Physics 5400H	4	E&M		Physics 5401H	4	E&M
	GEC Lang 3	4	GEC Lang		Physics 4700	3	Elec Lab
	GEC	3	GEC #7		GEC	4	GEC #8
	<b>Semester Sum</b>	<b>15</b>			<b>Semester Sum</b>	<b>15</b>	
4	Physics 5600	4	StatMech		Physics 5300	4	Theor Mechanics
	Physics 5700	3	Adv Lab		Physics 7998	1	Dbl counted research
	GEC	3	GEC #9		GEC	3	GEC #11
	GEC	3	GEC #10		Free Elective	3	
	Free Elective	3			Free Elective	3	
	<b>Semester Sum</b>	<b>16</b>			<b>Semester Sum</b>	<b>14</b>	
					<b>Total SemHours:</b>	<b>121</b>	
					<b>Total MS</b>	<b>12</b>	Double counted
5	Physics 7701	3	Math Meth Phys		Physics 68xx	4	Special Topics
	Physics 68xx	4	Special Topics		Physics 7998	6	Research
	Physics 7998	4	Research				
	<b>Semester Sum</b>	<b>11</b>			<b>Semester Sum</b>	<b>10</b>	
					<b>Total MS</b>	<b>33</b>	
	Required Grad Physics courses: 1 Physics 7000-level (7701)					Hours:	3
	Required Grad Physics courses: 2 Physics >= 5000-level (68xx,68xx)					Hours:	8
	Required Graduate courses >=2: Physics 5300, 5600					Hours:	8
	Required Research hours: Physics 7998					Hours:	11
	Required Graduate coursework to get to 33 hours (Physics 5700)					Hours:	3
	Total Masters Program Hours (satisfies Plan B requirements)					Hours:	33

# Semester Advising Sheet for BS/MS

COLLEGE OF ARTS AND SCIENCES: Combined BS/MS in PHYSICS; Masters Advising Form																																		
Last name:			Address																															
First Name:			City																															
Middle:			Zip Code																															
OSU ID																																		
lastname.#																																		
Expected graduation		(semester)		(year)																														
<p><b>Required courses: Students must complete 1 Physics course at 7000-level and 2 Physics courses at 5000-level or above. Students must also complete 2 additional graduate courses (not necessarily Physics) at 5000-level or above, approved by their faculty advisor.</b></p> <p>List the courses below, along with the credit hours and grade attained:</p> <table border="1"> <thead> <tr> <th>Courses</th> <th>Credits</th> <th>Grade</th> <th>Combined BS/MS Requirements Requirements:</th> <th>Completed</th> </tr> </thead> <tbody> <tr> <td>Course 1:</td> <td></td> <td></td> <td>1) Minimum GPA of 3.0 (B) in all required courses.</td> <td></td> </tr> <tr> <td>Course 2:</td> <td></td> <td></td> <td>2) Minimum 10 hours of research</td> <td></td> </tr> <tr> <td>Course 3:</td> <td></td> <td></td> <td>3) Minimum of 33 credit hours</td> <td></td> </tr> <tr> <td>Course 4:</td> <td></td> <td></td> <td>4) Demonstration of competence in individual research</td> <td></td> </tr> <tr> <td>Course 5:</td> <td></td> <td></td> <td>5) Pass Final Oral Examination</td> <td></td> </tr> </tbody> </table>					Courses	Credits	Grade	Combined BS/MS Requirements Requirements:	Completed	Course 1:			1) Minimum GPA of 3.0 (B) in all required courses.		Course 2:			2) Minimum 10 hours of research		Course 3:			3) Minimum of 33 credit hours		Course 4:			4) Demonstration of competence in individual research		Course 5:			5) Pass Final Oral Examination	
Courses	Credits	Grade	Combined BS/MS Requirements Requirements:	Completed																														
Course 1:			1) Minimum GPA of 3.0 (B) in all required courses.																															
Course 2:			2) Minimum 10 hours of research																															
Course 3:			3) Minimum of 33 credit hours																															
Course 4:			4) Demonstration of competence in individual research																															
Course 5:			5) Pass Final Oral Examination																															
<p><b>Required: At least 2 approved graduate-level courses</b></p> <table border="1"> <thead> <tr> <th>Course</th> <th>Credits</th> <th>Grade</th> </tr> </thead> <tbody> <tr><td>Course 1:</td><td></td><td></td></tr> <tr><td>Course 2:</td><td></td><td></td></tr> <tr><td>Course 3:</td><td></td><td></td></tr> <tr><td>Course 4:</td><td></td><td></td></tr> <tr><td>Course 5:</td><td></td><td></td></tr> </tbody> </table>					Course	Credits	Grade	Course 1:			Course 2:			Course 3:			Course 4:			Course 5:														
Course	Credits	Grade																																
Course 1:																																		
Course 2:																																		
Course 3:																																		
Course 4:																																		
Course 5:																																		
<p><b>Required: A minimum of 10 hours of research</b></p> <table border="1"> <thead> <tr> <th>Course</th> <th>Credits</th> <th>Grade</th> </tr> </thead> <tbody> <tr><td>Physics 7998</td><td></td><td></td></tr> <tr><td>Physics 8998</td><td></td><td></td></tr> </tbody> </table>					Course	Credits	Grade	Physics 7998			Physics 8998																							
Course	Credits	Grade																																
Physics 7998																																		
Physics 8998																																		
<p><b>Up to 12 credit hours may be double counted for both the BS and MS degrees. List courses, credit hours, and grades below:</b></p> <table border="1"> <thead> <tr> <th>Course</th> <th>Credits</th> <th>Grade</th> </tr> </thead> <tbody> <tr><td>Course 1:</td><td></td><td></td></tr> <tr><td>Course 2:</td><td></td><td></td></tr> <tr><td>Course 3:</td><td></td><td></td></tr> <tr><td>Course 4:</td><td></td><td></td></tr> <tr><td>Course 5:</td><td></td><td></td></tr> <tr><td>Course 6:</td><td></td><td></td></tr> <tr><td>Course 7:</td><td></td><td></td></tr> </tbody> </table>					Course	Credits	Grade	Course 1:			Course 2:			Course 3:			Course 4:			Course 5:			Course 6:			Course 7:								
Course	Credits	Grade																																
Course 1:																																		
Course 2:																																		
Course 3:																																		
Course 4:																																		
Course 5:																																		
Course 6:																																		
Course 7:																																		
Total Graduate Credit Hours Earned:																																		
<p><b>The Master's Examination Oral Portion</b></p> <p>The oral portion of the Master's Examination is held after the submission of the final written report (plan B) and in the quarter the student expects to graduate. An "Application to Graduate" form must be filed with the Graduate School by the appropriate deadline for that semester. The oral examination will be at least one hour in length. It will be conducted by a committee composed of the candidate's advisor (chairperson) and at least one other member of the graduate faculty. The chairperson of the examining committee is responsible for arranging the examination and for certifying its results to the Graduate School and to the departmental Graduate Studies Committee. (There is a form for the report to the Graduate School.) The report of a two-person committee must be unanimous in order to be considered satisfactory. The certification to the Graduate School of the successful completion of the requirements shall be made by the student's advisor and the Vice Chair for Graduate Studies and Research. A candidate who fails this examination must register in the Graduate School and continue work for an additional semester before an opportunity will be given for a second examination. No student will be permitted a third examination.</p>																																		



# Quarter Advising Sheet for BS/MS Program

COLLEGE OF ARTS AND SCIENCES: Combined BS/MS in PHYSICS; Masters Advising Form				
Last name:		Address		
First Name:		City		
Middle:		Zip Code		
OSU ID				
lastname.#				
Expected graduation		(quarter)	(year)	
<b>Required: All Masters students must complete at least 5 of the courses below, including two at the 800-level:</b> 1) Physics 730 or Math 601,602 (for students deficient in Math); 2) 600-level or above courses; 3) 700-level or above courses; 4) Physics 821, 846, 847, 827,828,829, 834,835,836				
List the courses below, along with the credit hours and grade attained:				
Courses	Credits	Grade	Combined BS/MS Requirements Requirements:	Completed
Course 1:			1) Minimum GPA of 3.0 (B) in all required courses.	
Course 2:			2) Minimum 14 hours of research	
Course 3:			3) Minimum of 50 credit hours	
Course 4:			4) Demonstration of competence in individual research	
Course 5:			5) Pass Final Oral Examination	
<b>Students must also complete 2 additional graduate courses (not necessarily Physics), approved by their faculty advisor.</b>				
Course	Credits	Grade	<b>The Master's Examination Oral Portion</b> The oral portion of the Master's Examination is held after the submission of the final written report (plan B) and in the quarter the student expects to graduate. An "Application to Graduate" form must be filed with the Graduate School no later than the second Friday of that quarter. The oral examination will be at least one hour in length. It will be conducted by a committee composed of the candidate's advisor (chairperson) and at least one other member of the graduate faculty. The chairperson of the examining committee is responsible for arranging the examination and for certifying its results to the Graduate School and to the departmental Graduate Studies Committee. (There is a form for the report to the Graduate School.) The report of a two-person committee must be unanimous in order to be considered satisfactory. The certification to the Graduate School of the successful completion of the requirements shall be made by the student's advisor and the Vice Chair for Graduate Studies and Research. A candidate who fails this examination must register in the Graduate School and continue work for an additional quarter before an opportunity will be given for a second examination. No student will be permitted a third examination.	
Course 1:				
Course 2:				
Course 3:				
Course 4:				
Course 5:				
<b>Required: A minimum of 14 hours of research</b>				
Course	Credits	Grade		
Physics 816				
Physics 999				
Up to 20 credit hours may be double counted for both the BS and MS degrees. List courses, credit hours, and grades below:				
Course	Credits	Grade		
Course 1:				
Course 2:				
Course 3:				
Course 4:				
Course 5:				
Course 6:				
Course 7:				
Total Graduate Credit Hours Earned:				
<b>The Master's Examination Oral Portion</b> The oral portion of the Master's Examination is held after the submission of the final written report (plan B) and in the quarter the student expects to graduate. An "Application to Graduate" form must be filed with the Graduate School no later than the second Friday of that quarter. The oral examination will be at least one hour in length. It will be conducted by a committee composed of the candidate's advisor (chairperson) and at least one other member of the graduate faculty. The chairperson of the examining committee is responsible for arranging the examination and for certifying its results to the Graduate School and to the departmental Graduate Studies Committee. (There is a form for the report to the Graduate School.) The report of a two-person committee must be unanimous in order to be considered satisfactory. The certification to the Graduate School of the successful completion of the requirements shall be made by the student's advisor and the Vice Chair for Graduate Studies and Research. A candidate who fails this examination must register in the Graduate School and continue work for an additional quarter before an opportunity will be given for a second examination. No student will be permitted a third examination.				

Semester Course Number	Course Title	Semester Units	Quarter Equivalent Course Number	Quarter Credits	Notes
<b><u>Combined Undergrad/Grad Level Courses</u></b>					
Physics 5400/5400H	E&M I	4	Physics 555	4	Semester course has all of 555 and some of 656
			Physics 656	4	
Physics 5500/5500H	Quantum I	4	Physics 631	4	Semester course has all of 631 and some of 632
			Physics 632	4	
Physics 5700	Advanced Laboratory	3	Physics 616	4	Same content
Physics 5401H	E&M II	4	Physics 656	4	Semester course has some of 656 and all of 657
			Physics 657	4	
Physics 5501H	Quantum II	4	Physics 632	4	Semester course has some of 632 and all of 633
			Physics 633	4	
Physics 5600	Statistical Physics	4	Physics 621	4	Semester course has all of 621 and some of 622
			Physics 622	4	
Physics 5300	Theoretical Mechanics	4	Physics 664	4	Enhanced content
<b><u>Graduate Introductory</u></b>					
Physics 6802	Topics in Elementary Particle Physics	4	Physics 780.xx	4	Enhanced content
Physics 6803	Topics in Astroparticle Physics	4	Physics 780.xx	4	Enhanced content
Physics 6804	Topics in Atomic and Molecular Physics	4	Physics 780.xx	4	Enhanced content
Physics 6805	Topics in Nuclear Physics	4	Physics 780.xx	4	Enhanced content
Physics 6806	Topics in Condensed Matter Physics	4	Physics 780.xx	4	Enhanced content
Physics 6809	Topics in Biophysics	4	Physics 780.xx	4	Enhanced content
Physics 6810	Topics in Computational Physics	4	Physics 780.xx	4	Enhanced content
Physics 6820	Special Topics	4	Physics 780.xx	4	Enhanced content
Physics 6780	Special Topics Seminar	1	Physics 795	1	Same content

Semester Course Number	Course Title	Semester Units	Quarter Equivalent Course Number	Quarter Credits	Notes
<b><u>Graduate Core</u></b>					
7701	Analytic and Numeric methods of Physics	3.00	Physics 730	4	Semester course has some of 730 and some of 834
			Physics 834	4	
7401	Electromagnetic Field Theory	3.00	Physics 835	4	Semester course has some of 835 and some of 836
			Physics 836	4	
7501	Quantum Mechanics 1	3.00	Physics 827	5	Semester course has some of 827 and some of 828
			Physics 828	5	
7502	Quantum Mechanics 2	3.00	Physics 828	5	Semester course has some of 828 and some of 829
			Physics 829	5	
7601	Classical and Statistical Physics I	3.00	Physics 821	4	Semester course has all of 821 and some of 846
			Physics 846	4	
7602	Classical and Statistical Physics II	3.00	Physics 846	4	Semester course has some of 846 and some of 847
			Physics 847	4	
<b><u>Graduate Advanced</u></b>					
7503	Quantum Mechanics 3	3.00	Physics 830	4	Enhanced content
7603	Advanced Statistical Physics	3.00	Physics 848	4	Enhanced content
7891	Departmental Seminar or Workshop	Variable	Physics 816	Variable	Semester version
7998	Graduate Research	Variable	Physics 816	Variable	Semester version
8301	Elasticity and Fluid Mechanics	3.00	Physics 822	4	Content of 822
8802.1	Topics in Elementary Particle Physics 1	3.00	Physics 880.02	3	Enhanced content
8802.2	Topics in Elementary Particle Physics 2	3.00	Physics 880.02	3	Enhanced content
8803.1	Topics in Astroparticle Physics 1	3.00	Physics 880.20	3	Enhanced content

<b>Semester Course Number</b>	<b>Course Title</b>	<b>Semester Units</b>		<b>Quarter Equivalent Course Number</b>	<b>Quarter Credits</b>	<b>Notes</b>
<b>8803.2</b>	<b>Topics in Astroparticle Physics 2</b>	<b>3.00</b>		<b>Physics 880.20</b>	<b>3</b>	<b>Enhanced content</b>
<b>8804.1</b>	<b>Topics in Atomic and Molecular Physics 1</b>	<b>3.00</b>		<b>Physics 880.20</b>	<b>3</b>	<b>Enhanced content</b>
<b>8804.2</b>	<b>Topics in Atomic and Molecular Physics 2</b>	<b>3.00</b>		<b>Physics 880.20</b>	<b>3</b>	<b>Enhanced content</b>
<b>8805.1</b>	<b>Topics in Nuclear Physics</b>	<b>3.00</b>		<b>Physics 880.05</b>	<b>3</b>	<b>Enhanced content</b>
<b>8805.2</b>	<b>Topics in Nuclear Physics</b>	<b>3.00</b>		<b>Physics 880.05</b>	<b>3</b>	<b>Enhanced content</b>
<b>8806.1</b>	<b>Topics in Condensed Matter Physics 1</b>	<b>3.00</b>		<b>Physics 880.06</b>	<b>3</b>	<b>Enhanced content</b>
<b>8806.2</b>	<b>Topics in Condensed Matter Physics 2</b>	<b>3.00</b>		<b>Physics 880.06</b>	<b>3</b>	<b>Enhanced content</b>
<b>8808.1</b>	<b>Topics in the theory of Quantized Fields 1</b>	<b>3.00</b>		<b>Physics 880.08</b>	<b>3</b>	<b>Enhanced content</b>
<b>8808.2</b>	<b>Topics in the theory of Quantized Fields 2</b>	<b>3.00</b>		<b>Physics 880.08</b>	<b>3</b>	<b>Enhanced content</b>
<b>8809.1</b>	<b>Topics in Biophysics</b>	<b>3.00</b>		<b>Physics 880.20</b>	<b>3</b>	<b>Enhanced content</b>
<b>8809.2</b>	<b>Topics in Biophysics</b>	<b>3.00</b>		<b>Physics 880.20</b>	<b>3</b>	<b>Enhanced content</b>
<b>8820</b>	<b>Special Topics</b>	<b>3.00</b>		<b>Physics 880.20</b>	<b>3</b>	<b>Enhanced content</b>
<b>8999</b>	<b>Research in Physics</b>	<b>Variable</b>		<b>Physics 999</b>	<b>Variable</b>	<b>Semester version</b>

**Comparison of Masters and BS/MS Programs under quarters and semesters.**

Requirements	BS/MS under semesters	BS/MS under Quarters	Masters Plan A under semesters	Masters Plan A under quarters	Masters Plan B under semesters	Masters Plan B under quarters
<b>Physics Courses</b>	1 at 7000 level or above	2 at 800 level	1 at 7000 level or above	2 at 800 Level	1 at 7000 level or above	2 at 800 Level
	2 at 5000 level or above	3 at 600 level or above (see note 1)	2 at 5000 level or above	3 at 600 or above (see note 2)	2 at 5000 level or above	3 at 600 or above (see note 2)
<b>Other grad Courses (could be physics)</b>	2 approved grad courses	2 approved grad courses	1 at 6000 level or above (see note 3)	none	1 at 6000 level or above (see note 3)	none
<b>Credit hours in courses</b> <b>QH: Quarter hours</b> <b>SH: Semester hours</b>	15-19 SH (=22.5-28.5 QH)	26-28 QH	12-15 SH (=18-22.5 QH)	20 QH	12-15 SH (=18-22.5 QH)	20 QH
<b>Research hours</b>	10	14	10	10	10	10
<b>Maximum double counted hours</b>	12 for BS	20 for BS	None	None	None	None
<b>Total hours</b>	33	50	30	45	33	50
<b>Thesis</b>	No	No	Yes	Yes	No	No
<b>Note 1:</b>	Physics courses required for the BS/MS are allowed to be any 600-level course or above. Note that only 20 of these hours can be double counted for the BS and MS degrees.					
<b>Note 2:</b>	Physics courses required for the Masters (Plans A and B) under quarters are specified in a list, which included Physics 617, Physics 780.xx, and Physics 8xx courses. So the requirement is not exactly 3 courses at 600-level or above.					
<b>Note 3:</b>	This course is expected to be a 6000-level or higher Physics course. Exceptions to this (e.g. 5000-level Statistics course) are allowed if approved by the student's faculty advisor.					