

Department of
Physics



Stephen McNeil, Department Chair
Richard Datwyler, Richard Hatt, Evan Hansen, Jon Johnson,
Kevin Kelley, Todd Lines, Stephen McNeil, Ryan Nielson, David
Oliphant, Brian Pyper, Brian Tonks, Stephen Turcotte

Melanie Nelson, Department Secretary (208) 496-7730
<http://www.byui.edu/Physics>

Introduction

“The most incomprehensible thing about the universe is that it is comprehensible.” - Albert Einstein

Physics is devoted to the study of matter and energy on a range of scales extending from the size of the atom to the size of the entire universe. Advances in our understanding of matter and its interactions have led to great scientific and technological progress. This progress will continue in the future as physicists refine their tools and techniques of inquiry.

A background in Physics opens up a wide variety of career opportunities in such fields as acoustics, astronomy, biophysics, atomic physics, geophysics, nanotechnology, nuclear physics, optics, particle physics, solid state, and quantum physics. For example, solid state physicists are involved in the semiconductor industry and the development of a wide range of materials such as superconductors and conducting polymers. Nuclear physicists are in high demand in nuclear energy and nuclear medicine, now used extensively for diagnosis and treatment. A background in optics can be applied in fiber optic communication and the design of optical instruments for astronomy and the aerospace industry. In addition, physics is applied in a variety of other fields like engineering, medicine, law, biology, and chemistry.

The Bachelor of Science (B.S.) degree in physics at BYU-Idaho offers students a solid foundation in both classical and modern physics. Students take a range of introductory and advanced classes in mechanics, electricity and magnetism, quantum mechanics, and thermal physics. Laboratory courses are an important component of the physics program. These courses give students valuable skills and knowledge in experimental physics, extensive experience in modeling and simulations, computer control of devices, and data acquisition.

The knowledge and skills that students gain in the physics program at BYU-Idaho can be applied to a number of different career paths. These skills include (but are not limited to) critical thinking, reading, and writing skills, mathematical and conceptual reasoning, computer skills, leadership and communication skills, problem solving, creativity, synthesizing results, and applying theory to real world problems.

After completing their B.S. in physics from BYU-Idaho, students will have a wide range of opportunities. These include the following:

- Graduate school: students can continue their studies in physics or a number of other disciplines
- Professional school: students can go on to medical school, dental school, business school, or law school
- Industry: Physicists are hired by a number of companies and government labs throughout the country

The Bachelor of Science in Physics Education at BYU-Idaho prepares students to teach physics in high school. Each Physics Education major must complete the Secondary Education Core and carefully select an approved education minor. Please discuss your choice of an Education minor with your advisor.

Minor/Emphasis Options

Students pursuing a B.S. in physics are required to choose one out of nine emphasis areas. Each emphasis area consists of 11 or 12 credit hours in an applied area of physics and will help prepare students for graduate school and/or careers. For many of the emphasis areas (e.g. mathematics, chemistry, and geology) students can take additional courses and receive a minor in that area. Students are encouraged to meet with their faculty mentor as they decide on the emphasis area that will help them meet their career goals.

If your emphasis area requires one of the upper level physics electives (PH 323, 324, 374, 375), you will be required to take an additional upper level physics elective to fulfill the physics core requirement.

Supported Tracks

The physics department supports all three tracks (FW, WS, SF) during the freshman and sophomore years. Before the junior year, a student will need to switch to the FW track.

BS in Physics			
Astronomy Emphasis (770-154)			
Take required Foundations courses			
Major Requirements			
<i>No Grade Less Than C- in Major Courses</i>			
Core Courses <i>Take these courses during your first 3 semesters:</i> MATH 215 4 PH 121 3 PH 123 3 PH 150 1 PH 220 3 <hr style="width: 50px; margin-left: 0;"/> 14 <i>Take these courses:</i> MATH 316 4 PH 250 1 PH 279 3 PH 291 2 PH 314 3 <hr style="width: 50px; margin-left: 0;"/> 13 <i>Take these courses:</i> PH 328 2 PH 332 4 PH 333 4 PH 336 2 PH 385 2 <hr style="width: 50px; margin-left: 0;"/> 14	Take these courses: PH 412 3 PH 433 3 PH 473 3 <hr style="width: 50px; margin-left: 0;"/> 9 Take 1 course: PH 323 3 PH 324 3 PH 374* 3 PH 375 3 <hr style="width: 50px; margin-left: 0;"/> 3 Internship/Research Courses Take 1 course: PH 398R 1 PH 406 1 <hr style="width: 50px; margin-left: 0;"/> 1 Take this course: PH 488 1 <hr style="width: 50px; margin-left: 0;"/> 1	Astronomy Emphasis Courses Take these courses: PH 127 3 PH 277 2 PH 374* 3 CHEM 105 4 <hr style="width: 50px; margin-left: 0;"/> 12	Program Notes: <i>*PH 374 is required for the emphasis. A different upper level physics elective is required for the core requirements.</i>
Total Major Credits=67			
Additional Elective Credits Required for Graduation=13			
This major is available on the following tracks:			
Fall-Winter---- YES		Winter-Spring/Spring-Fall---- Freshman Sophomore YES/Junior Senior NO	

Graduation Plan				
BS in Physics - Astronomy Emphasis (770-154)				
Semester 1 <i>Take these courses:</i> PH 150 1 PH 121 3 PH 127 3 FDSCI 101 2 FDMAT 112 2 FDREL 121 or 122 2 <hr style="width: 50px; margin-left: 0;"/> 15	Semester 2 <i>Take these courses:</i> MATH 215 4 PH 123 3 CHEM 105 4 FDENG 101 3 FDREL 121 or 122 2 <hr style="width: 50px; margin-left: 0;"/> 16	Semester 3 <i>Take these courses:</i> MATH 316 4 PH 220 3 PH 250 1 PH 277* 2 FDAMF 101 3 FDREL 200 2 <hr style="width: 50px; margin-left: 0;"/> 15	Semester 4 <i>Take these courses:</i> PH 291 2 PH 279 3 FDMAT108T 1-3 FDSCI Issues 3 FDREL Scripture 2 FDENG 201 3 <hr style="width: 50px; margin-left: 0;"/> 14-16	Semester 5 <i>Take these courses:</i> PH 333 4 PH 328 2 PH 332 4 Elective Credit 3 FDREL Scripture 2 <hr style="width: 50px; margin-left: 0;"/> 15
Semester 6 <i>Take these courses:</i> PH 385 2 PH 336 2 PH 314 3 PH 374** 3 FDCA/FDWLD 2-3 FDSCI Issues 2 <hr style="width: 50px; margin-left: 0;"/> 14-15	Off-Track ***Choose 1: PH 398R or 1 PH 406 fall semester 1 <hr style="width: 50px; margin-left: 0;"/> 1	Semester 7 <i>Take these courses:</i> PH 406*** 1 PH 433 3 PH 412 3 PH Elective 3 FDCA/FDWLD 2-3 FDREL Elective 2 <hr style="width: 50px; margin-left: 0;"/> 14-15	Semester 8 <i>Take these courses:</i> PH 473 3 PH 488 1 FDCNC 250 2 Elective Credit 4 Elective Credit 3 FDREL Elective 2 <hr style="width: 50px; margin-left: 0;"/> 15	Program Notes <i>*PH 277 is a fall only course</i> <i>**PH 374 is offered in the Winter, in even years.</i>

BS in Physics
Biophysics Emphasis (770-155)

Take required Foundations courses

Major Requirements

No Grade Less Than C- in Major Courses

<p>Core Courses <i>Take these courses during your first 3 semesters:</i></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>MATH 215</td><td style="text-align: right;">4</td></tr> <tr><td>PH 121</td><td style="text-align: right;">3</td></tr> <tr><td>PH 123</td><td style="text-align: right;">3</td></tr> <tr><td>PH 150</td><td style="text-align: right;">1</td></tr> <tr><td>PH 220</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">14</td></tr> </table> <p><i>Take these courses:</i></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>MATH 316</td><td style="text-align: right;">4</td></tr> <tr><td>PH 250</td><td style="text-align: right;">1</td></tr> <tr><td>PH 279</td><td style="text-align: right;">3</td></tr> <tr><td>PH 291</td><td style="text-align: right;">2</td></tr> <tr><td>PH 314</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">13</td></tr> </table> <p><i>Take these courses:</i></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>PH 328</td><td style="text-align: right;">2</td></tr> <tr><td>PH 332</td><td style="text-align: right;">4</td></tr> <tr><td>PH 333</td><td style="text-align: right;">4</td></tr> <tr><td>PH 336</td><td style="text-align: right;">2</td></tr> <tr><td>PH 385</td><td style="text-align: right;">2</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">14</td></tr> </table>	MATH 215	4	PH 121	3	PH 123	3	PH 150	1	PH 220	3		14	MATH 316	4	PH 250	1	PH 279	3	PH 291	2	PH 314	3		13	PH 328	2	PH 332	4	PH 333	4	PH 336	2	PH 385	2		14	<p><i>Take these courses:</i></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>PH 412</td><td style="text-align: right;">3</td></tr> <tr><td>PH 433</td><td style="text-align: right;">3</td></tr> <tr><td>PH 473</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">9</td></tr> </table> <p><i>Take 1 course:</i></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>PH 323</td><td style="text-align: right;">3</td></tr> <tr><td>PH 324</td><td style="text-align: right;">3</td></tr> <tr><td>PH 374</td><td style="text-align: right;">3</td></tr> <tr><td>PH 375</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">3</td></tr> </table> <p>Internship/Research Courses <i>Take 1 course:</i></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>PH 398R</td><td style="text-align: right;">1</td></tr> <tr><td>PH 406</td><td style="text-align: right;">1</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">1</td></tr> </table> <p><i>Take this course:</i></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>PH 488</td><td style="text-align: right;">1</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">1</td></tr> </table>	PH 412	3	PH 433	3	PH 473	3		9	PH 323	3	PH 324	3	PH 374	3	PH 375	3		3	PH 398R	1	PH 406	1		1	PH 488	1		1	<p>Biophysics Emphasis Courses <i>Take these courses:</i></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>BIO 180</td><td style="text-align: right;">4</td></tr> <tr><td>BIO 181</td><td style="text-align: right;">4</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">8</td></tr> </table> <p><i>Take 1 course:</i></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>BIO 375</td><td style="text-align: right;">3</td></tr> <tr><td>BIO 376</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">3</td></tr> </table>	BIO 180	4	BIO 181	4		8	BIO 375	3	BIO 376	3		3	<p><i>Program Notes:</i></p>
MATH 215	4																																																																														
PH 121	3																																																																														
PH 123	3																																																																														
PH 150	1																																																																														
PH 220	3																																																																														
	14																																																																														
MATH 316	4																																																																														
PH 250	1																																																																														
PH 279	3																																																																														
PH 291	2																																																																														
PH 314	3																																																																														
	13																																																																														
PH 328	2																																																																														
PH 332	4																																																																														
PH 333	4																																																																														
PH 336	2																																																																														
PH 385	2																																																																														
	14																																																																														
PH 412	3																																																																														
PH 433	3																																																																														
PH 473	3																																																																														
	9																																																																														
PH 323	3																																																																														
PH 324	3																																																																														
PH 374	3																																																																														
PH 375	3																																																																														
	3																																																																														
PH 398R	1																																																																														
PH 406	1																																																																														
	1																																																																														
PH 488	1																																																																														
	1																																																																														
BIO 180	4																																																																														
BIO 181	4																																																																														
	8																																																																														
BIO 375	3																																																																														
BIO 376	3																																																																														
	3																																																																														

Total Major Credits=66

Additional Elective Credits Required for Graduation=14

This major is available on the following tracks:

Fall-Winter---- YES Winter-Spring/Spring-Fall---- Freshman Sophomore YES/Junior Senior NO

Graduation Plan
BS in Physics - Biophysics Emphasis (770-155)

<p>Semester 1 <i>Take these courses:</i></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>PH 150</td><td style="text-align: right;">1</td></tr> <tr><td>PH 121</td><td style="text-align: right;">3</td></tr> <tr><td>FDSCI 101</td><td style="text-align: right;">2</td></tr> <tr><td>FDMAT 112</td><td style="text-align: right;">4</td></tr> <tr><td>FDREL 121 or 122</td><td style="text-align: right;">2</td></tr> <tr><td>Elective Credit</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">15</td></tr> </table>	PH 150	1	PH 121	3	FDSCI 101	2	FDMAT 112	4	FDREL 121 or 122	2	Elective Credit	3		15	<p>Semester 2 <i>Take these courses:</i></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>MATH 215</td><td style="text-align: right;">4</td></tr> <tr><td>PH 123</td><td style="text-align: right;">3</td></tr> <tr><td>BIO 180</td><td style="text-align: right;">4</td></tr> <tr><td>FDENG 101</td><td style="text-align: right;">3</td></tr> <tr><td>FDREL 121 or 122</td><td style="text-align: right;">2</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">16</td></tr> </table>	MATH 215	4	PH 123	3	BIO 180	4	FDENG 101	3	FDREL 121 or 122	2		16	<p>Semester 3 <i>Take these courses:</i></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>MATH 316</td><td style="text-align: right;">4</td></tr> <tr><td>PH 220</td><td style="text-align: right;">3</td></tr> <tr><td>PH 250</td><td style="text-align: right;">1</td></tr> <tr><td>BIO 181</td><td style="text-align: right;">4</td></tr> <tr><td>FDREL 200</td><td style="text-align: right;">2</td></tr> <tr><td>FDMAT 108T</td><td style="text-align: right;">1-3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">15-17</td></tr> </table>	MATH 316	4	PH 220	3	PH 250	1	BIO 181	4	FDREL 200	2	FDMAT 108T	1-3		15-17	<p>Semester 4 <i>Take these courses:</i></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>PH 291</td><td style="text-align: right;">2</td></tr> <tr><td>PH 279</td><td style="text-align: right;">3</td></tr> <tr><td>FDENG 201</td><td style="text-align: right;">3</td></tr> <tr><td>FDSCI Issues</td><td style="text-align: right;">3</td></tr> <tr><td>FDREL Scripture</td><td style="text-align: right;">2</td></tr> <tr><td>Elective Credit</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">16</td></tr> </table>	PH 291	2	PH 279	3	FDENG 201	3	FDSCI Issues	3	FDREL Scripture	2	Elective Credit	3		16	<p>Semester 5 <i>Take these courses:</i></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>PH 333</td><td style="text-align: right;">4</td></tr> <tr><td>PH 328</td><td style="text-align: right;">2</td></tr> <tr><td>PH 332</td><td style="text-align: right;">4</td></tr> <tr><td>FDAMF 101</td><td style="text-align: right;">3</td></tr> <tr><td>FDREL Scripture</td><td style="text-align: right;">2</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">15</td></tr> </table>	PH 333	4	PH 328	2	PH 332	4	FDAMF 101	3	FDREL Scripture	2		15
PH 150	1																																																																					
PH 121	3																																																																					
FDSCI 101	2																																																																					
FDMAT 112	4																																																																					
FDREL 121 or 122	2																																																																					
Elective Credit	3																																																																					
	15																																																																					
MATH 215	4																																																																					
PH 123	3																																																																					
BIO 180	4																																																																					
FDENG 101	3																																																																					
FDREL 121 or 122	2																																																																					
	16																																																																					
MATH 316	4																																																																					
PH 220	3																																																																					
PH 250	1																																																																					
BIO 181	4																																																																					
FDREL 200	2																																																																					
FDMAT 108T	1-3																																																																					
	15-17																																																																					
PH 291	2																																																																					
PH 279	3																																																																					
FDENG 201	3																																																																					
FDSCI Issues	3																																																																					
FDREL Scripture	2																																																																					
Elective Credit	3																																																																					
	16																																																																					
PH 333	4																																																																					
PH 328	2																																																																					
PH 332	4																																																																					
FDAMF 101	3																																																																					
FDREL Scripture	2																																																																					
	15																																																																					
<p>Semester 6 <i>Take these courses:</i></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>PH 385</td><td style="text-align: right;">2</td></tr> <tr><td>PH 336</td><td style="text-align: right;">2</td></tr> <tr><td>PH 314</td><td style="text-align: right;">3</td></tr> <tr><td>FDCA/FDWLD</td><td style="text-align: right;">2-3</td></tr> <tr><td>FDSCI Issues</td><td style="text-align: right;">2</td></tr> <tr><td>Elective Credit</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">14-15</td></tr> </table>	PH 385	2	PH 336	2	PH 314	3	FDCA/FDWLD	2-3	FDSCI Issues	2	Elective Credit	3		14-15	<p>Off-Track <i>***Choose 1:</i></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>PH 398R or</td><td style="text-align: right;">1</td></tr> <tr><td>PH 406 fall semester</td><td style="text-align: right;">1</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">1</td></tr> </table>	PH 398R or	1	PH 406 fall semester	1		1	<p>Semester 7 <i>Take these courses:</i></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>***PH 406</td><td style="text-align: right;">1</td></tr> <tr><td>PH 433</td><td style="text-align: right;">3</td></tr> <tr><td>PH 412</td><td style="text-align: right;">3</td></tr> <tr><td>BIO 375 or BIO 376</td><td style="text-align: right;">3</td></tr> <tr><td>FDCA/FDWLD</td><td style="text-align: right;">2-3</td></tr> <tr><td>FDREL Elective</td><td style="text-align: right;">2</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">14-15</td></tr> </table>	***PH 406	1	PH 433	3	PH 412	3	BIO 375 or BIO 376	3	FDCA/FDWLD	2-3	FDREL Elective	2		14-15	<p>Semester 8 <i>Take these courses:</i></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>PH 473</td><td style="text-align: right;">3</td></tr> <tr><td>PH 488</td><td style="text-align: right;">1</td></tr> <tr><td>FDCNC 250</td><td style="text-align: right;">2</td></tr> <tr><td>PH Elective</td><td style="text-align: right;">3</td></tr> <tr><td>FDREL Elective</td><td style="text-align: right;">2</td></tr> <tr><td>Elective Credit</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">14</td></tr> </table>	PH 473	3	PH 488	1	FDCNC 250	2	PH Elective	3	FDREL Elective	2	Elective Credit	3		14	<p><i>Program Notes</i></p>																		
PH 385	2																																																																					
PH 336	2																																																																					
PH 314	3																																																																					
FDCA/FDWLD	2-3																																																																					
FDSCI Issues	2																																																																					
Elective Credit	3																																																																					
	14-15																																																																					
PH 398R or	1																																																																					
PH 406 fall semester	1																																																																					
	1																																																																					
***PH 406	1																																																																					
PH 433	3																																																																					
PH 412	3																																																																					
BIO 375 or BIO 376	3																																																																					
FDCA/FDWLD	2-3																																																																					
FDREL Elective	2																																																																					
	14-15																																																																					
PH 473	3																																																																					
PH 488	1																																																																					
FDCNC 250	2																																																																					
PH Elective	3																																																																					
FDREL Elective	2																																																																					
Elective Credit	3																																																																					
	14																																																																					

Physics

Brigham Young University-Idaho 2014-2015

BS in Physics Chemistry Emphasis (770-156)			
Take required Foundations courses			
Major Requirements			
<i>No Grade Less Than C- in Major Courses</i>			
Core Courses <i>Take these courses during your first 3 semesters:</i> MATH 215 4 PH 121 3 PH 123 3 PH 150 1 PH 220 3 <hr style="width: 100%;"/> 14 <i>Take these courses:</i> MATH 316 4 PH 250 1 PH 279 3 PH 291 2 PH 314 3 <hr style="width: 100%;"/> 13 <i>Take these courses:</i> PH 328 2 PH 332 4 PH 333 4 PH 336 2 PH 385 2 <hr style="width: 100%;"/> 14	<i>Take these courses:</i> PH 412 3 PH 433 3 PH 473 3 <hr style="width: 100%;"/> 9 <i>Take 1 course:</i> PH 323 3 PH 324 3 PH 374 3 PH 375 3 <hr style="width: 100%;"/> 3 Internship/Research Courses <i>Take 1 course:</i> PH 398R 1 PH 406 1 <hr style="width: 100%;"/> 1 <i>Take this course:</i> PH 488 1 <hr style="width: 100%;"/> 1	Chemistry Emphasis Courses <i>Take these courses:</i> CHEM 105 4 CHEM 106 4 CHEM 351 4 <hr style="width: 100%;"/> 12	<i>Program Notes:</i>
Total Major Credits=67 Additional Elective Credits Required for Graduation=13			
This major is available on the following tracks:			
Fall-Winter---- YES Winter-Spring/Spring-Fall---- Freshman Sophomore YES/Junior Senior NO			

Graduation Plan BS in Physics - Chemistry Emphasis (770-156)				
Semester 1 <i>Take these courses:</i> PH 150 1 PH 121 3 FDSCI 101 2 FDMAT 112 4 FDREL 121 or 122 2 Elective Credit 3 <hr style="width: 100%;"/> 15	Semester 2 <i>Take these courses:</i> MATH 215 4 PH 123 3 CHEM 105 4 FDENG 101 3 FDREL 121 or 122 2 <hr style="width: 100%;"/> 16	Semester 3 <i>Take these courses:</i> MATH 316 4 PH 220 3 PH 250 1 FDAMF 101 3 FDREL 200 2 FDMAT 108T 1-3 <hr style="width: 100%;"/> 14-16	Semester 4 <i>Take these courses:</i> PH 291 2 PH 279 3 CHEM 106 4 FDSCI Issues 2 FDREL Scripture 2 FDENG 201 3 <hr style="width: 100%;"/> 16	Semester 5 <i>Take these courses:</i> PH 333 4 PH 328 2 PH 332 4 PH Elective 3 FDREL Scripture 2 <hr style="width: 100%;"/> 15
Semester 6 <i>Take these courses:</i> PH 385 2 PH 336 2 PH 314 3 FDCA/FDWLD 2-3 FDSCI Issues 3 Elective Credit 3 <hr style="width: 100%;"/> 15-16	Off-Track ***Choose 1: PH 398R or 1 PH 406 fall semester 1 <hr style="width: 100%;"/> 1	Semester 7 <i>Take these courses:</i> ***PH 406 1 PH 433 3 PH 412 3 FDCA/FDWLD 2-3 FDREL Elective 2 Elective 4 <hr style="width: 100%;"/> 15-16	Semester 8 <i>Take these courses:</i> PH 473 3 PH 488 1 CHEM 351 4 FDCNC 250 2 FDREL Elective 2 Elective Credit 3 <hr style="width: 100%;"/> 15	<i>Program Notes</i>

BS in Physics
Computational Emphasis (770-157)

Take required Foundations courses

Major Requirements

No Grade Less Than C- in Major Courses

<p>Core Courses <i>Take these courses during your first 3 semesters:</i></p> <p>MATH 215 4 PH 121 3 PH 123 3 PH 150 1 PH 220 3 <hr style="width: 100%;"/>14</p> <p><i>Take these courses:</i></p> <p>MATH 316 4 PH 250 1 PH 279 3 PH 291 2 PH 314 3 <hr style="width: 100%;"/>13</p> <p><i>Take these courses:</i></p> <p>PH 328 2 PH 332 4 PH 333 4 PH 336 2 PH 385 2 <hr style="width: 100%;"/>14</p>	<p><i>Take these courses:</i></p> <p>PH 412 3 PH 433 3 PH 473 3 <hr style="width: 100%;"/>9</p> <p><i>Take 1 course:</i></p> <p>PH 323 3 PH 324 3 PH 374 3 PH 375 3 <hr style="width: 100%;"/>3</p> <p>Internship/Research Courses <i>Take 1 course:</i></p> <p>PH 398R 1 PH 406 1 <hr style="width: 100%;"/>1</p> <p><i>Take this course:</i></p> <p>PH 488 1 <hr style="width: 100%;"/>1</p>	<p>Computational Emphasis Courses <i>Take these courses:</i></p> <p>CS 124 3 CS 165 3 CS 237 3 MATH 411 3 <hr style="width: 100%;"/>12</p>	<p><i>Program Notes:</i></p>
---	---	--	------------------------------

Total Major Credits=67

Additional Elective Credits Required for Graduation=13

This major is available on the following tracks:

Fall-Winter---- YES Winter-Spring/Spring-Fall---- Freshman Sophomore YES/Junior Senior NO

Graduation Plan
BS in Physics - Computational Emphasis (770-157)

<p>Semester 1 <i>Take these courses:</i></p> <p>PH 150 1 PH 121 3 CS 124 3 FDSCI 101 2 FDMAT 112 4 FDREL 121 or 122 2 <hr style="width: 100%;"/>15</p>	<p>Semester 2 <i>Take these courses:</i></p> <p>MATH 215 4 PH 123 3 CS 165 3 FDENG 101 3 FDREL 121 or 122 2 <hr style="width: 100%;"/>15</p>	<p>Semester 3 <i>Take these courses:</i></p> <p>MATH 316 4 PH 220 3 PH 250 1 FDAMF 101 3 FDREL 200 2 FDMAT 108T 1-3 <hr style="width: 100%;"/>14-16</p>	<p>Semester 4 <i>Take these courses:</i></p> <p>PH 291 2 PH 279 3 CS 237 3 FDSCI Issues 2 FDCA/FDWLD 2-3 FDENG 201 3 <hr style="width: 100%;"/>15-16</p>	<p>Semester 5 <i>Take these courses:</i></p> <p>PH 333 4 PH 328 2 PH 332 4 PH Elective 3 FDREL Scripture 2 <hr style="width: 100%;"/>15</p>
<p>Semester 6 <i>Take these courses:</i></p> <p>PH 385 2 PH 336 2 PH 314 3 FDREL Scripture 2 FDSCI Issues 3 Elective Credit 4 <hr style="width: 100%;"/>16</p>	<p>Off-Track <i>***Choose 1:</i></p> <p>PH 398R or 1 PH 406 fall semester 1 <hr style="width: 100%;"/>1</p>	<p>Semester 7 <i>Take these courses:</i></p> <p>***PH 406 1 PH 433 3 PH 412 3 MATH 411 3 FDREL Elective 2 Elective Credit 4 <hr style="width: 100%;"/>16</p>	<p>Semester 8 <i>Take these courses:</i></p> <p>PH 473 3 PH 488 1 FDCNC 250 2 FDCA/FDWLD 2-3 FDREL Elective 2 Elective Credit 5 <hr style="width: 100%;"/>15-16</p>	<p><i>Program Notes</i></p> <p><i>CS 306 and CS 235 are not required, but would be beneficial and could be counted as elective credits.</i></p>

BS in Physics
Engineering Emphasis (770-158)

Take required Foundations courses

Major Requirements

No Grade Less Than C- in Major Courses

<p>Core Courses <i>Take these courses during your first 3 semesters:</i></p> <table style="width: 100%;"> <tr><td>MATH 215</td><td style="text-align: right;">4</td></tr> <tr><td>PH 121</td><td style="text-align: right;">3</td></tr> <tr><td>PH 123</td><td style="text-align: right;">3</td></tr> <tr><td>PH 150</td><td style="text-align: right;">1</td></tr> <tr><td>PH 220</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">14</td></tr> </table> <p><i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>MATH 316</td><td style="text-align: right;">4</td></tr> <tr><td>PH 250</td><td style="text-align: right;">1</td></tr> <tr><td>PH 279</td><td style="text-align: right;">3</td></tr> <tr><td>PH 291</td><td style="text-align: right;">2</td></tr> <tr><td>PH 314</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">13</td></tr> </table> <p><i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>PH 328</td><td style="text-align: right;">2</td></tr> <tr><td>PH 332</td><td style="text-align: right;">4</td></tr> <tr><td>PH 333</td><td style="text-align: right;">4</td></tr> <tr><td>PH 336</td><td style="text-align: right;">2</td></tr> <tr><td>PH 385</td><td style="text-align: right;">2</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">14</td></tr> </table>	MATH 215	4	PH 121	3	PH 123	3	PH 150	1	PH 220	3		14	MATH 316	4	PH 250	1	PH 279	3	PH 291	2	PH 314	3		13	PH 328	2	PH 332	4	PH 333	4	PH 336	2	PH 385	2		14	<p><i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>PH 412</td><td style="text-align: right;">3</td></tr> <tr><td>PH 433</td><td style="text-align: right;">3</td></tr> <tr><td>PH 473</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">9</td></tr> </table> <p><i>Take 1 course:</i></p> <table style="width: 100%;"> <tr><td>PH 323</td><td style="text-align: right;">3</td></tr> <tr><td>PH 324</td><td style="text-align: right;">3</td></tr> <tr><td>PH 374</td><td style="text-align: right;">3</td></tr> <tr><td>PH 375</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">12</td></tr> </table> <p>Internship/Research Courses</p> <p><i>Take 1 course:</i></p> <table style="width: 100%;"> <tr><td>PH 398R</td><td style="text-align: right;">1</td></tr> <tr><td>PH 406</td><td style="text-align: right;">1</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">2</td></tr> </table> <p><i>Take this course:</i></p> <table style="width: 100%;"> <tr><td>PH 488</td><td style="text-align: right;">1</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">1</td></tr> </table>	PH 412	3	PH 433	3	PH 473	3		9	PH 323	3	PH 324	3	PH 374	3	PH 375	3		12	PH 398R	1	PH 406	1		2	PH 488	1		1	<p>Engineering Emphasis Courses</p> <p><i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>ME 142</td><td style="text-align: right;">3</td></tr> <tr><td>ME 250*</td><td style="text-align: right;">3</td></tr> <tr><td>ME 360*</td><td style="text-align: right;">3</td></tr> <tr><td>ME 425*</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">12</td></tr> </table>	ME 142	3	ME 250*	3	ME 360*	3	ME 425*	3		12	<p><i>Program Notes:</i></p> <p><i>*There are prerequisites for ME 250, ME 360, and ME 425, but have similar physics equivalents. Students must ask for a waiver to these prerequisites, as per agreement with the ME department.</i></p>
MATH 215	4																																																																												
PH 121	3																																																																												
PH 123	3																																																																												
PH 150	1																																																																												
PH 220	3																																																																												
	14																																																																												
MATH 316	4																																																																												
PH 250	1																																																																												
PH 279	3																																																																												
PH 291	2																																																																												
PH 314	3																																																																												
	13																																																																												
PH 328	2																																																																												
PH 332	4																																																																												
PH 333	4																																																																												
PH 336	2																																																																												
PH 385	2																																																																												
	14																																																																												
PH 412	3																																																																												
PH 433	3																																																																												
PH 473	3																																																																												
	9																																																																												
PH 323	3																																																																												
PH 324	3																																																																												
PH 374	3																																																																												
PH 375	3																																																																												
	12																																																																												
PH 398R	1																																																																												
PH 406	1																																																																												
	2																																																																												
PH 488	1																																																																												
	1																																																																												
ME 142	3																																																																												
ME 250*	3																																																																												
ME 360*	3																																																																												
ME 425*	3																																																																												
	12																																																																												

Total Major Credits=67

Additional Elective Credits Required for Graduation=13

This major is available on the following tracks:

Fall-Winter---- YES Winter-Spring/Spring-Fall---- Freshman Sophomore YES/Junior Senior NO

Graduation Plan
BS in Physics - Engineering Emphasis (770-158)

<p>Semester 1 <i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>PH 150</td><td style="text-align: right;">1</td></tr> <tr><td>PH 121</td><td style="text-align: right;">3</td></tr> <tr><td>ME 142</td><td style="text-align: right;">3</td></tr> <tr><td>FDSCI 101</td><td style="text-align: right;">2</td></tr> <tr><td>FDMAT 112</td><td style="text-align: right;">4</td></tr> <tr><td>FDREL 121 or 122</td><td style="text-align: right;">2</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">15</td></tr> </table>	PH 150	1	PH 121	3	ME 142	3	FDSCI 101	2	FDMAT 112	4	FDREL 121 or 122	2		15	<p>Semester 2 <i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>MATH 215</td><td style="text-align: right;">4</td></tr> <tr><td>PH 123</td><td style="text-align: right;">3</td></tr> <tr><td>Elective Credit</td><td style="text-align: right;">4</td></tr> <tr><td>FDENG 101</td><td style="text-align: right;">3</td></tr> <tr><td>FDREL 121 or 122</td><td style="text-align: right;">2</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">16</td></tr> </table>	MATH 215	4	PH 123	3	Elective Credit	4	FDENG 101	3	FDREL 121 or 122	2		16	<p>Semester 3 <i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>MATH 316</td><td style="text-align: right;">4</td></tr> <tr><td>PH 220</td><td style="text-align: right;">3</td></tr> <tr><td>PH 250</td><td style="text-align: right;">1</td></tr> <tr><td>FDAMF 101</td><td style="text-align: right;">3</td></tr> <tr><td>FDREL 200</td><td style="text-align: right;">2</td></tr> <tr><td>FDMAT 108T</td><td style="text-align: right;">1-3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">14-16</td></tr> </table>	MATH 316	4	PH 220	3	PH 250	1	FDAMF 101	3	FDREL 200	2	FDMAT 108T	1-3		14-16	<p>Semester 4 <i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>PH 291</td><td style="text-align: right;">2</td></tr> <tr><td>PH 279</td><td style="text-align: right;">3</td></tr> <tr><td>ME 250</td><td style="text-align: right;">3</td></tr> <tr><td>ME 250L*</td><td style="text-align: right;">1</td></tr> <tr><td>FDSCI Issues</td><td style="text-align: right;">2</td></tr> <tr><td>FDCA/FDWLD</td><td style="text-align: right;">2-3</td></tr> <tr><td>FDENG 201</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">16-17</td></tr> </table>	PH 291	2	PH 279	3	ME 250	3	ME 250L*	1	FDSCI Issues	2	FDCA/FDWLD	2-3	FDENG 201	3		16-17	<p>Semester 5 <i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>PH 333</td><td style="text-align: right;">4</td></tr> <tr><td>PH 328</td><td style="text-align: right;">2</td></tr> <tr><td>PH 332</td><td style="text-align: right;">4</td></tr> <tr><td>PH Elective</td><td style="text-align: right;">3</td></tr> <tr><td>FDREL Scripture</td><td style="text-align: right;">2</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">15</td></tr> </table>	PH 333	4	PH 328	2	PH 332	4	PH Elective	3	FDREL Scripture	2		15
PH 150	1																																																																							
PH 121	3																																																																							
ME 142	3																																																																							
FDSCI 101	2																																																																							
FDMAT 112	4																																																																							
FDREL 121 or 122	2																																																																							
	15																																																																							
MATH 215	4																																																																							
PH 123	3																																																																							
Elective Credit	4																																																																							
FDENG 101	3																																																																							
FDREL 121 or 122	2																																																																							
	16																																																																							
MATH 316	4																																																																							
PH 220	3																																																																							
PH 250	1																																																																							
FDAMF 101	3																																																																							
FDREL 200	2																																																																							
FDMAT 108T	1-3																																																																							
	14-16																																																																							
PH 291	2																																																																							
PH 279	3																																																																							
ME 250	3																																																																							
ME 250L*	1																																																																							
FDSCI Issues	2																																																																							
FDCA/FDWLD	2-3																																																																							
FDENG 201	3																																																																							
	16-17																																																																							
PH 333	4																																																																							
PH 328	2																																																																							
PH 332	4																																																																							
PH Elective	3																																																																							
FDREL Scripture	2																																																																							
	15																																																																							
<p>Semester 6 <i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>PH 385</td><td style="text-align: right;">2</td></tr> <tr><td>PH 336</td><td style="text-align: right;">2</td></tr> <tr><td>PH 314</td><td style="text-align: right;">3</td></tr> <tr><td>ME 360</td><td style="text-align: right;">3</td></tr> <tr><td>FDSCI Issues</td><td style="text-align: right;">3</td></tr> <tr><td>FDREL Scripture</td><td style="text-align: right;">2</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">15</td></tr> </table>	PH 385	2	PH 336	2	PH 314	3	ME 360	3	FDSCI Issues	3	FDREL Scripture	2		15	<p>Off-Track <i>***Choose One:</i></p> <table style="width: 100%;"> <tr><td>PH 398R or</td><td style="text-align: right;">1</td></tr> <tr><td>PH 406 fall semester</td><td style="text-align: right;">1</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">1</td></tr> </table>	PH 398R or	1	PH 406 fall semester	1		1	<p>Semester 7 <i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>***PH 406</td><td style="text-align: right;">1</td></tr> <tr><td>PH 433</td><td style="text-align: right;">3</td></tr> <tr><td>PH 412</td><td style="text-align: right;">3</td></tr> <tr><td>ME 425</td><td style="text-align: right;">3</td></tr> <tr><td>FDREL Elective</td><td style="text-align: right;">2</td></tr> <tr><td>Elective Credit</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">15</td></tr> </table>	***PH 406	1	PH 433	3	PH 412	3	ME 425	3	FDREL Elective	2	Elective Credit	3		15	<p>Semester 8 <i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>PH 473</td><td style="text-align: right;">3</td></tr> <tr><td>PH 488</td><td style="text-align: right;">1</td></tr> <tr><td>FDREL Elective</td><td style="text-align: right;">2</td></tr> <tr><td>FDCA/FDWLD</td><td style="text-align: right;">2-3</td></tr> <tr><td>FDCNC 250</td><td style="text-align: right;">2</td></tr> <tr><td>Elective Credit</td><td style="text-align: right;">4</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">14-15</td></tr> </table>	PH 473	3	PH 488	1	FDREL Elective	2	FDCA/FDWLD	2-3	FDCNC 250	2	Elective Credit	4		14-15	<p><i>*ME 250L is not required but would be beneficial & could be counted as an elective credit</i></p> <p><i>**ME 250, 360, & 425 all have prereq's that the ME Department will waive if you've had the physics equivalent.</i></p>																				
PH 385	2																																																																							
PH 336	2																																																																							
PH 314	3																																																																							
ME 360	3																																																																							
FDSCI Issues	3																																																																							
FDREL Scripture	2																																																																							
	15																																																																							
PH 398R or	1																																																																							
PH 406 fall semester	1																																																																							
	1																																																																							
***PH 406	1																																																																							
PH 433	3																																																																							
PH 412	3																																																																							
ME 425	3																																																																							
FDREL Elective	2																																																																							
Elective Credit	3																																																																							
	15																																																																							
PH 473	3																																																																							
PH 488	1																																																																							
FDREL Elective	2																																																																							
FDCA/FDWLD	2-3																																																																							
FDCNC 250	2																																																																							
Elective Credit	4																																																																							
	14-15																																																																							

BS in Physics
Geophysics Emphasis (770-159)

Take required Foundations courses

Major Requirements

No Grade Less Than C- in Major Courses

<p>Core Courses <i>Take these courses during your first 3 semesters:</i></p> <table style="width: 100%;"> <tr><td>MATH 215</td><td style="text-align: right;">4</td></tr> <tr><td>PH 121</td><td style="text-align: right;">3</td></tr> <tr><td>PH 123</td><td style="text-align: right;">3</td></tr> <tr><td>PH 150</td><td style="text-align: right;">1</td></tr> <tr><td>PH 220</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">14</td></tr> </table> <p><i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>MATH 316</td><td style="text-align: right;">4</td></tr> <tr><td>PH 250</td><td style="text-align: right;">1</td></tr> <tr><td>PH 279</td><td style="text-align: right;">3</td></tr> <tr><td>PH 291</td><td style="text-align: right;">2</td></tr> <tr><td>PH 314</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">13</td></tr> </table> <p><i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>PH 328</td><td style="text-align: right;">2</td></tr> <tr><td>PH 332</td><td style="text-align: right;">4</td></tr> <tr><td>PH 333</td><td style="text-align: right;">4</td></tr> <tr><td>PH 336</td><td style="text-align: right;">2</td></tr> <tr><td>PH 385</td><td style="text-align: right;">2</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">14</td></tr> </table>	MATH 215	4	PH 121	3	PH 123	3	PH 150	1	PH 220	3		14	MATH 316	4	PH 250	1	PH 279	3	PH 291	2	PH 314	3		13	PH 328	2	PH 332	4	PH 333	4	PH 336	2	PH 385	2		14	<p><i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>PH 412</td><td style="text-align: right;">3</td></tr> <tr><td>PH 433</td><td style="text-align: right;">3</td></tr> <tr><td>PH 473</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">9</td></tr> </table> <p><i>Take 1 course:</i></p> <table style="width: 100%;"> <tr><td>PH 323</td><td style="text-align: right;">3</td></tr> <tr><td>PH 324</td><td style="text-align: right;">3</td></tr> <tr><td>PH 374</td><td style="text-align: right;">3</td></tr> <tr><td>PH 375</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">3</td></tr> </table> <p>Internship/Research Courses <i>Take 1 course:</i></p> <table style="width: 100%;"> <tr><td>PH 398R</td><td style="text-align: right;">1</td></tr> <tr><td>PH 406</td><td style="text-align: right;">1</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">1</td></tr> </table> <p><i>Take this course:</i></p> <table style="width: 100%;"> <tr><td>PH 488</td><td style="text-align: right;">1</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">1</td></tr> </table>	PH 412	3	PH 433	3	PH 473	3		9	PH 323	3	PH 324	3	PH 374	3	PH 375	3		3	PH 398R	1	PH 406	1		1	PH 488	1		1	<p>Geophysics Emphasis Courses <i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>GEOL 111</td><td style="text-align: right;">3</td></tr> <tr><td>GEOL 111L</td><td style="text-align: right;">1</td></tr> <tr><td>GEOL 140</td><td style="text-align: right;">1</td></tr> <tr><td>GEOL 370</td><td style="text-align: right;">4</td></tr> <tr><td>GEOL 445</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">12</td></tr> </table>	GEOL 111	3	GEOL 111L	1	GEOL 140	1	GEOL 370	4	GEOL 445	3		12	<p><i>Program Notes:</i> GEOL 391 and 392, while not required, would be beneficial and count be counted as elective credits.</p>
MATH 215	4																																																																														
PH 121	3																																																																														
PH 123	3																																																																														
PH 150	1																																																																														
PH 220	3																																																																														
	14																																																																														
MATH 316	4																																																																														
PH 250	1																																																																														
PH 279	3																																																																														
PH 291	2																																																																														
PH 314	3																																																																														
	13																																																																														
PH 328	2																																																																														
PH 332	4																																																																														
PH 333	4																																																																														
PH 336	2																																																																														
PH 385	2																																																																														
	14																																																																														
PH 412	3																																																																														
PH 433	3																																																																														
PH 473	3																																																																														
	9																																																																														
PH 323	3																																																																														
PH 324	3																																																																														
PH 374	3																																																																														
PH 375	3																																																																														
	3																																																																														
PH 398R	1																																																																														
PH 406	1																																																																														
	1																																																																														
PH 488	1																																																																														
	1																																																																														
GEOL 111	3																																																																														
GEOL 111L	1																																																																														
GEOL 140	1																																																																														
GEOL 370	4																																																																														
GEOL 445	3																																																																														
	12																																																																														

Total Major Credits=67

Additional Elective Credits Required for Graduation=13

This major is available on the following tracks:

Fall-Winter---- YES

Winter-Spring/Spring-Fall----

Freshman Sophomore YES/Junior Senior NO

Graduation Plan
BS in Physics - Geophysics Emphasis (770-159)

<p>Semester 1 <i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>PH 150</td><td style="text-align: right;">1</td></tr> <tr><td>PH 121</td><td style="text-align: right;">3</td></tr> <tr><td>FDSCI 101</td><td style="text-align: right;">2</td></tr> <tr><td>FDMAT 112</td><td style="text-align: right;">4</td></tr> <tr><td>FDREL 121 or 122</td><td style="text-align: right;">2</td></tr> <tr><td>Elective Credit</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">15</td></tr> </table>	PH 150	1	PH 121	3	FDSCI 101	2	FDMAT 112	4	FDREL 121 or 122	2	Elective Credit	3		15	<p>Semester 2 <i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>MATH 215</td><td style="text-align: right;">4</td></tr> <tr><td>PH 123</td><td style="text-align: right;">3</td></tr> <tr><td>GEOL 111</td><td style="text-align: right;">3</td></tr> <tr><td>GEOL 111L</td><td style="text-align: right;">1</td></tr> <tr><td>FDENG 101</td><td style="text-align: right;">3</td></tr> <tr><td>FDREL 121 or 122</td><td style="text-align: right;">2</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">16</td></tr> </table>	MATH 215	4	PH 123	3	GEOL 111	3	GEOL 111L	1	FDENG 101	3	FDREL 121 or 122	2		16	<p>Semester 3 <i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>MATH 316</td><td style="text-align: right;">4</td></tr> <tr><td>PH 220</td><td style="text-align: right;">3</td></tr> <tr><td>PH 250</td><td style="text-align: right;">1</td></tr> <tr><td>FDAMF 101</td><td style="text-align: right;">3</td></tr> <tr><td>FDREL 200</td><td style="text-align: right;">2</td></tr> <tr><td>FDMAT 108T</td><td style="text-align: right;">1-3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">14-16</td></tr> </table>	MATH 316	4	PH 220	3	PH 250	1	FDAMF 101	3	FDREL 200	2	FDMAT 108T	1-3		14-16	<p>Semester 4 <i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>PH 291</td><td style="text-align: right;">2</td></tr> <tr><td>PH 279</td><td style="text-align: right;">3</td></tr> <tr><td>GEOL 140</td><td style="text-align: right;">1</td></tr> <tr><td>FDSCI Issues</td><td style="text-align: right;">3</td></tr> <tr><td>FDREL Scripture</td><td style="text-align: right;">2</td></tr> <tr><td>FDENG 201</td><td style="text-align: right;">3</td></tr> <tr><td>Elective Credit</td><td style="text-align: right;">2</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">16</td></tr> </table>	PH 291	2	PH 279	3	GEOL 140	1	FDSCI Issues	3	FDREL Scripture	2	FDENG 201	3	Elective Credit	2		16	<p>Semester 5 <i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>PH 333</td><td style="text-align: right;">4</td></tr> <tr><td>PH 328</td><td style="text-align: right;">2</td></tr> <tr><td>PH 332</td><td style="text-align: right;">4</td></tr> <tr><td>FDCA/FDWLD</td><td style="text-align: right;">2-3</td></tr> <tr><td>FDREL Scripture</td><td style="text-align: right;">2</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">14-15</td></tr> </table>	PH 333	4	PH 328	2	PH 332	4	FDCA/FDWLD	2-3	FDREL Scripture	2		14-15
PH 150	1																																																																									
PH 121	3																																																																									
FDSCI 101	2																																																																									
FDMAT 112	4																																																																									
FDREL 121 or 122	2																																																																									
Elective Credit	3																																																																									
	15																																																																									
MATH 215	4																																																																									
PH 123	3																																																																									
GEOL 111	3																																																																									
GEOL 111L	1																																																																									
FDENG 101	3																																																																									
FDREL 121 or 122	2																																																																									
	16																																																																									
MATH 316	4																																																																									
PH 220	3																																																																									
PH 250	1																																																																									
FDAMF 101	3																																																																									
FDREL 200	2																																																																									
FDMAT 108T	1-3																																																																									
	14-16																																																																									
PH 291	2																																																																									
PH 279	3																																																																									
GEOL 140	1																																																																									
FDSCI Issues	3																																																																									
FDREL Scripture	2																																																																									
FDENG 201	3																																																																									
Elective Credit	2																																																																									
	16																																																																									
PH 333	4																																																																									
PH 328	2																																																																									
PH 332	4																																																																									
FDCA/FDWLD	2-3																																																																									
FDREL Scripture	2																																																																									
	14-15																																																																									
<p>Semester 6 <i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>PH 385</td><td style="text-align: right;">2</td></tr> <tr><td>PH 336</td><td style="text-align: right;">2</td></tr> <tr><td>PH 314</td><td style="text-align: right;">3</td></tr> <tr><td>PH Elective</td><td style="text-align: right;">3</td></tr> <tr><td>FDSCI Issues</td><td style="text-align: right;">2</td></tr> <tr><td>Elective Credit</td><td style="text-align: right;">4</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">16</td></tr> </table>	PH 385	2	PH 336	2	PH 314	3	PH Elective	3	FDSCI Issues	2	Elective Credit	4		16	<p>Off-Track <i>***Choose 1:</i></p> <table style="width: 100%;"> <tr><td>PH 398R or</td><td style="text-align: right;">1</td></tr> <tr><td>PH 406 fall semester</td><td style="text-align: right;">1</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">1</td></tr> </table>	PH 398R or	1	PH 406 fall semester	1		1	<p>Semester 7 <i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>***PH 406</td><td style="text-align: right;">1</td></tr> <tr><td>PH 433</td><td style="text-align: right;">3</td></tr> <tr><td>PH 412</td><td style="text-align: right;">3</td></tr> <tr><td>GEOL 370*</td><td style="text-align: right;">4</td></tr> <tr><td>FDCA/FDWLD</td><td style="text-align: right;">2-3</td></tr> <tr><td>FDREL Elective</td><td style="text-align: right;">2</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">15-16</td></tr> </table>	***PH 406	1	PH 433	3	PH 412	3	GEOL 370*	4	FDCA/FDWLD	2-3	FDREL Elective	2		15-16	<p>Semester 8 <i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>PH 473</td><td style="text-align: right;">3</td></tr> <tr><td>PH 488</td><td style="text-align: right;">1</td></tr> <tr><td>GEOL 445</td><td style="text-align: right;">3</td></tr> <tr><td>FDCNC 250</td><td style="text-align: right;">2</td></tr> <tr><td>FDREL Elective</td><td style="text-align: right;">2</td></tr> <tr><td>Elective Credit</td><td style="text-align: right;">4</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">15</td></tr> </table>	PH 473	3	PH 488	1	GEOL 445	3	FDCNC 250	2	FDREL Elective	2	Elective Credit	4		15	<p><i>Program Notes</i> *GEOL 391 and 392 are not required, but would be beneficial and could be counted as elective credits.</p>																						
PH 385	2																																																																									
PH 336	2																																																																									
PH 314	3																																																																									
PH Elective	3																																																																									
FDSCI Issues	2																																																																									
Elective Credit	4																																																																									
	16																																																																									
PH 398R or	1																																																																									
PH 406 fall semester	1																																																																									
	1																																																																									
***PH 406	1																																																																									
PH 433	3																																																																									
PH 412	3																																																																									
GEOL 370*	4																																																																									
FDCA/FDWLD	2-3																																																																									
FDREL Elective	2																																																																									
	15-16																																																																									
PH 473	3																																																																									
PH 488	1																																																																									
GEOL 445	3																																																																									
FDCNC 250	2																																																																									
FDREL Elective	2																																																																									
Elective Credit	4																																																																									
	15																																																																									

Physics

Brigham Young University-Idaho 2014-2015

BS in Physics

Mathematical Emphasis (770-165)

Take required Foundations courses

Major Requirements

No Grade Less Than C- in Major Courses

Core Courses <i>Take these courses during your first 3 semesters:</i> MATH 215 4 PH 121 3 PH 123 3 PH 150 1 PH 220 3 <hr style="width: 100%;"/> 14 <i>Take these courses:</i> MATH 316 4 PH 250 1 PH 279 3 PH 291 2 PH 314 3 <hr style="width: 100%;"/> 13 <i>Take these courses:</i> PH 328 2 PH 332 4 PH 333 4 PH 336 2 PH 385 2 <hr style="width: 100%;"/> 14	<i>Take these courses:</i> PH 412 3 PH 433 3 PH 473 3 <hr style="width: 100%;"/> 9 <i>Take 1 course:</i> PH 323 3 PH 324 3 PH 374 3 PH 375 3 <hr style="width: 100%;"/> 3 Internship/Research Courses <i>Take 1 course:</i> PH 398R 1 PH 406 1 <hr style="width: 100%;"/> 1 <i>Take this course:</i> PH 488 1 <hr style="width: 100%;"/> 1	Mathematical Emphasis Courses <i>Choose one of the following options:</i> Option 1- Statistical <i>Take these courses:</i> MATH 221B 3 MATH 341 3 MATH 472 3 <hr style="width: 100%;"/> 9 <i>Take 1 course:</i> MATH 423 3 MATH 327 3 <hr style="width: 100%;"/> 3 Option 2- Group Theory <i>Take these courses:</i> MATH 301 3 MATH 341 3 MATH 441 3 <hr style="width: 100%;"/> 9 <i>Take 1 course:</i> MATH 442 3 MATH 463 3 <hr style="width: 100%;"/> 3	Program Notes: Students may choose the math emphasis that best matches their educational and career goals.
---	---	---	--

Total Major Credits=67

Additional Elective Credits Required for Graduation=13

This major is available on the following tracks:

Fall-Winter---- YES

Winter-Spring/Spring-Fall----

Freshman Sophomore YES/Junior Senior NO

Graduation Plan

BS in Physics - Mathematical Emphasis (770-165)

Semester 1 <i>Take these courses:</i> PH 150 1 PH 121 3 FDSCI 101 2 FDMAT 112 4 FDREL 121 or 122 2 Elective Credit 4 <hr style="width: 100%;"/> 16	Semester 2 <i>Take these courses:</i> MATH 215 4 PH 123 3 FDSCI Issues 2 FDENG 101 3 FDREL 121 or 122 2 FDMAT 108T 1-3 <hr style="width: 100%;"/> 15-17	Semester 3 <i>Take these courses:</i> MATH 316 4 PH 220 3 PH 250 1 MATH 221B or 301* 3 FDAMF 101 3 FDREL 200 2 <hr style="width: 100%;"/> 16	Semester 4 <i>Take these courses:</i> PH 291 2 PH 279 3 MATH 341 3 FDSCI Issues 2 FDREL Scripture 2 FDENG 201 3 <hr style="width: 100%;"/> 15	Semester 5 <i>Take these courses:</i> PH 333 4 PH 279 2 PH 332 4 Elective Credit 4 FDREL Scripture 2 <hr style="width: 100%;"/> 16
Semester 6 <i>Take these courses:</i> PH 385 2 PH 336 2 PH 314 3 MATH 327/423/441* 3 FDCA/FDWLD 2-3 <hr style="width: 100%;"/> 12-13	Off-Track ***Choose 1: PH 398R or 1 PH 406 fall semester 1 <hr style="width: 100%;"/> 1	Semester 7 <i>Take these courses:</i> ***PH 406 1 PH 433 3 PH 412 3 PH Elective 3 FDCA/FDWLD 2-3 FDREL Elective 2 <hr style="width: 100%;"/> 14	Semester 8 <i>Take these courses:</i> PH 473 3 PH 488 1 FDCNC 250 2 MATH 472/442/463* 3 Elective Credit 4 FDREL Elective 2 <hr style="width: 100%;"/> 15	Program Notes *Take care to plan out which math courses you choose for the emphasis, as many are only offered once a year or every other year.

BS in Physics

Medical Physics Emphasis (770-166)

Take required Foundations courses

Major Requirements

No Grade Less Than C- in Major Courses

<p>Core Courses <i>Take these courses during your first 3 semesters:</i></p> <table style="width: 100%;"> <tr><td>MATH 215</td><td style="text-align: right;">4</td></tr> <tr><td>PH 121</td><td style="text-align: right;">3</td></tr> <tr><td>PH 123</td><td style="text-align: right;">3</td></tr> <tr><td>PH 150</td><td style="text-align: right;">1</td></tr> <tr><td>PH 220</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">14</td></tr> </table> <p><i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>MATH 316</td><td style="text-align: right;">4</td></tr> <tr><td>PH 250</td><td style="text-align: right;">1</td></tr> <tr><td>PH 279</td><td style="text-align: right;">3</td></tr> <tr><td>PH 291</td><td style="text-align: right;">2</td></tr> <tr><td>PH 314</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">13</td></tr> </table> <p><i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>PH 328</td><td style="text-align: right;">2</td></tr> <tr><td>PH 332</td><td style="text-align: right;">4</td></tr> <tr><td>PH 333</td><td style="text-align: right;">4</td></tr> <tr><td>PH 336</td><td style="text-align: right;">2</td></tr> <tr><td>PH 385</td><td style="text-align: right;">2</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">14</td></tr> </table>	MATH 215	4	PH 121	3	PH 123	3	PH 150	1	PH 220	3		14	MATH 316	4	PH 250	1	PH 279	3	PH 291	2	PH 314	3		13	PH 328	2	PH 332	4	PH 333	4	PH 336	2	PH 385	2		14	<p><i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>PH 412</td><td style="text-align: right;">3</td></tr> <tr><td>PH 433</td><td style="text-align: right;">3</td></tr> <tr><td>PH 473</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">9</td></tr> </table> <p><i>Take 1 course:</i></p> <table style="width: 100%;"> <tr><td>PH 323</td><td style="text-align: right;">3</td></tr> <tr><td>PH 324</td><td style="text-align: right;">3</td></tr> <tr><td>PH 374</td><td style="text-align: right;">3</td></tr> <tr><td>PH 375</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">3</td></tr> </table> <p>Internship/Research Courses <i>Take 1 course:</i></p> <table style="width: 100%;"> <tr><td>PH 398R</td><td style="text-align: right;">1</td></tr> <tr><td>PH 406</td><td style="text-align: right;">1</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">1</td></tr> </table> <p><i>Take this course:</i></p> <table style="width: 100%;"> <tr><td>PH 488</td><td style="text-align: right;">1</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">1</td></tr> </table>	PH 412	3	PH 433	3	PH 473	3		9	PH 323	3	PH 324	3	PH 374	3	PH 375	3		3	PH 398R	1	PH 406	1		1	PH 488	1		1	<p>Medical Physics Emphasis Courses <i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>CHEM 105</td><td style="text-align: right;">4</td></tr> <tr><td>BIO 230*</td><td style="text-align: right;">4</td></tr> <tr><td>PH 324**</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">11</td></tr> </table>	CHEM 105	4	BIO 230*	4	PH 324**	3		11	<p><i>Program Notes:</i></p> <p>*BIO 264 & 265, while not required, are suggested courses & may be used to substitute for BIO 230.</p> <p>**PH 324 is required for the emphasis. A different upper level physics elective is required for the core requirements.</p>
MATH 215	4																																																																										
PH 121	3																																																																										
PH 123	3																																																																										
PH 150	1																																																																										
PH 220	3																																																																										
	14																																																																										
MATH 316	4																																																																										
PH 250	1																																																																										
PH 279	3																																																																										
PH 291	2																																																																										
PH 314	3																																																																										
	13																																																																										
PH 328	2																																																																										
PH 332	4																																																																										
PH 333	4																																																																										
PH 336	2																																																																										
PH 385	2																																																																										
	14																																																																										
PH 412	3																																																																										
PH 433	3																																																																										
PH 473	3																																																																										
	9																																																																										
PH 323	3																																																																										
PH 324	3																																																																										
PH 374	3																																																																										
PH 375	3																																																																										
	3																																																																										
PH 398R	1																																																																										
PH 406	1																																																																										
	1																																																																										
PH 488	1																																																																										
	1																																																																										
CHEM 105	4																																																																										
BIO 230*	4																																																																										
PH 324**	3																																																																										
	11																																																																										

Total Major Credits=66

Additional Elective Credits Required for Graduation=14

This major is available on the following tracks:

Fall-Winter---- YES

Winter-Spring/Spring-Fall----

Freshman Sophomore YES/Junior Senior NO

Graduation Plan

BS in Physics - Medical Physics Emphasis (770-166)

<p>Semester 1 <i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>PH 150</td><td style="text-align: right;">1</td></tr> <tr><td>PH 121</td><td style="text-align: right;">3</td></tr> <tr><td>FDSCI 101</td><td style="text-align: right;">2</td></tr> <tr><td>FDMAT 112</td><td style="text-align: right;">4</td></tr> <tr><td>FDREL 121 or 122</td><td style="text-align: right;">2</td></tr> <tr><td>Elective Credit</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">15</td></tr> </table>	PH 150	1	PH 121	3	FDSCI 101	2	FDMAT 112	4	FDREL 121 or 122	2	Elective Credit	3		15	<p>Semester 2 <i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>MATH 215</td><td style="text-align: right;">4</td></tr> <tr><td>PH 123</td><td style="text-align: right;">3</td></tr> <tr><td>CHEM 105</td><td style="text-align: right;">4</td></tr> <tr><td>FDENG 101</td><td style="text-align: right;">3</td></tr> <tr><td>FDREL 121 or 122</td><td style="text-align: right;">2</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">16</td></tr> </table>	MATH 215	4	PH 123	3	CHEM 105	4	FDENG 101	3	FDREL 121 or 122	2		16	<p>Semester 3 <i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>MATH 316</td><td style="text-align: right;">4</td></tr> <tr><td>PH 220</td><td style="text-align: right;">3</td></tr> <tr><td>PH 250</td><td style="text-align: right;">1</td></tr> <tr><td>FDAMF 101</td><td style="text-align: right;">3</td></tr> <tr><td>FDREL 200</td><td style="text-align: right;">2</td></tr> <tr><td>FDMAT 108T</td><td style="text-align: right;">1-3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">14-16</td></tr> </table>	MATH 316	4	PH 220	3	PH 250	1	FDAMF 101	3	FDREL 200	2	FDMAT 108T	1-3		14-16	<p>Semester 4 <i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>PH 291</td><td style="text-align: right;">2</td></tr> <tr><td>PH 279</td><td style="text-align: right;">3</td></tr> <tr><td>BIO 230*</td><td style="text-align: right;">4</td></tr> <tr><td>FDSCI Issues</td><td style="text-align: right;">2</td></tr> <tr><td>FDREL Scripture</td><td style="text-align: right;">2</td></tr> <tr><td>FDENG 201</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">16</td></tr> </table>	PH 291	2	PH 279	3	BIO 230*	4	FDSCI Issues	2	FDREL Scripture	2	FDENG 201	3		16	<p>Semester 5 <i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>PH 333</td><td style="text-align: right;">4</td></tr> <tr><td>PH 328</td><td style="text-align: right;">2</td></tr> <tr><td>PH 332</td><td style="text-align: right;">4</td></tr> <tr><td>PH 324</td><td style="text-align: right;">3</td></tr> <tr><td>FDREL Scripture</td><td style="text-align: right;">2</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">15</td></tr> </table>	PH 333	4	PH 328	2	PH 332	4	PH 324	3	FDREL Scripture	2		15
PH 150	1																																																																					
PH 121	3																																																																					
FDSCI 101	2																																																																					
FDMAT 112	4																																																																					
FDREL 121 or 122	2																																																																					
Elective Credit	3																																																																					
	15																																																																					
MATH 215	4																																																																					
PH 123	3																																																																					
CHEM 105	4																																																																					
FDENG 101	3																																																																					
FDREL 121 or 122	2																																																																					
	16																																																																					
MATH 316	4																																																																					
PH 220	3																																																																					
PH 250	1																																																																					
FDAMF 101	3																																																																					
FDREL 200	2																																																																					
FDMAT 108T	1-3																																																																					
	14-16																																																																					
PH 291	2																																																																					
PH 279	3																																																																					
BIO 230*	4																																																																					
FDSCI Issues	2																																																																					
FDREL Scripture	2																																																																					
FDENG 201	3																																																																					
	16																																																																					
PH 333	4																																																																					
PH 328	2																																																																					
PH 332	4																																																																					
PH 324	3																																																																					
FDREL Scripture	2																																																																					
	15																																																																					
<p>Semester 6 <i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>PH 385</td><td style="text-align: right;">2</td></tr> <tr><td>PH 336</td><td style="text-align: right;">2</td></tr> <tr><td>PH 314</td><td style="text-align: right;">3</td></tr> <tr><td>FDSCI Issues</td><td style="text-align: right;">3</td></tr> <tr><td>FDCA/FDWLD</td><td style="text-align: right;">2-3</td></tr> <tr><td>Elective Credit</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">15-16</td></tr> </table>	PH 385	2	PH 336	2	PH 314	3	FDSCI Issues	3	FDCA/FDWLD	2-3	Elective Credit	3		15-16	<p>Off-Track ***Choose One:</p> <table style="width: 100%;"> <tr><td>PH 398R or</td><td style="text-align: right;">1</td></tr> <tr><td>PH 406 fall semester</td><td style="text-align: right;">1</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">1</td></tr> </table>	PH 398R or	1	PH 406 fall semester	1		1	<p>Semester 7 <i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>***PH 406</td><td style="text-align: right;">1</td></tr> <tr><td>PH 433</td><td style="text-align: right;">3</td></tr> <tr><td>PH 412</td><td style="text-align: right;">3</td></tr> <tr><td>FDREL Elective</td><td style="text-align: right;">2</td></tr> <tr><td>FDCA/FDWLD</td><td style="text-align: right;">2-3</td></tr> <tr><td>Elective Credit</td><td style="text-align: right;">3</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">14-15</td></tr> </table>	***PH 406	1	PH 433	3	PH 412	3	FDREL Elective	2	FDCA/FDWLD	2-3	Elective Credit	3		14-15	<p>Semester 8 <i>Take these courses:</i></p> <table style="width: 100%;"> <tr><td>PH 473</td><td style="text-align: right;">3</td></tr> <tr><td>PH 488</td><td style="text-align: right;">1</td></tr> <tr><td>PH Elective</td><td style="text-align: right;">3</td></tr> <tr><td>FDCNC 250</td><td style="text-align: right;">2</td></tr> <tr><td>FDREL Elective</td><td style="text-align: right;">2</td></tr> <tr><td>Elective Credit</td><td style="text-align: right;">4</td></tr> <tr><td style="border-top: 1px solid black;"></td><td style="text-align: right; border-top: 1px solid black;">15</td></tr> </table>	PH 473	3	PH 488	1	PH Elective	3	FDCNC 250	2	FDREL Elective	2	Elective Credit	4		15	<p><i>Program Notes</i></p> <p>*Bio 230 is offered on a rotating schedule, so take care to fit it in early.</p> <p>**BIO 264 and 265 are not required, but would be beneficial and could be substituted for BIO 230 and 1 elective credit.</p>																		
PH 385	2																																																																					
PH 336	2																																																																					
PH 314	3																																																																					
FDSCI Issues	3																																																																					
FDCA/FDWLD	2-3																																																																					
Elective Credit	3																																																																					
	15-16																																																																					
PH 398R or	1																																																																					
PH 406 fall semester	1																																																																					
	1																																																																					
***PH 406	1																																																																					
PH 433	3																																																																					
PH 412	3																																																																					
FDREL Elective	2																																																																					
FDCA/FDWLD	2-3																																																																					
Elective Credit	3																																																																					
	14-15																																																																					
PH 473	3																																																																					
PH 488	1																																																																					
PH Elective	3																																																																					
FDCNC 250	2																																																																					
FDREL Elective	2																																																																					
Elective Credit	4																																																																					
	15																																																																					

Physics

Brigham Young University-Idaho 2014-2015

BS in Physics Pre-Medical Emphasis (770-167)			
Take required Foundations courses			
Major Requirements			
<i>No Grade Less Than C- in Major Courses</i>			
Core Courses <i>Take these courses during your first 3 semesters:</i> MATH 215 4 PH 121 3 PH 123 3 PH 150 1 PH 220 3 <hr style="width: 100%;"/> 14 <i>Take these courses:</i> MATH 316 4 PH 250 1 PH 279 3 PH 291 2 PH 314 3 <hr style="width: 100%;"/> 13 <i>Take these courses:</i> PH 328 2 PH 332 4 PH 333 4 PH 336 2 PH 385 2 <hr style="width: 100%;"/> 14	<i>Take these courses:</i> PH 412 3 PH 433 3 PH 473 3 <hr style="width: 100%;"/> 9 <i>Take 1 course:</i> PH 323 3 PH 324 3 PH 374 3 PH 375 3 <hr style="width: 100%;"/> 3 Internship/Research Courses <i>Take 1 course:</i> PH 398R 1 PH 406 1 <hr style="width: 100%;"/> 1 <i>Take this course:</i> PH 488 1 <hr style="width: 100%;"/> 1	Pre-Medical Emphasis Courses <i>Take these courses:</i> CHEM 105 4 CHEM 106 4 BIO 180 4 <hr style="width: 100%;"/> 12	<i>Program Notes:</i>
Total Major Credits=67 Additional Elective Credits Required for Graduation=13			
This major is available on the following tracks:			
Fall-Winter---- YES Winter-Spring/Spring-Fall---- Freshman Sophomore YES/Junior Senior NO			

Graduation Plan BS in Physics - Pre-Medical Emphasis (770-167)				
Semester 1 <i>Take these courses:</i> PH 150 1 PH 121 3 FDSCI 101 2 FDMAT 112 4 FDREL 121 or 122 2 Elective Credit 3 <hr style="width: 100%;"/> 15	Semester 2 <i>Take these courses:</i> MATH 215 4 PH 123 3 CHEM 105 4 FDENG 101 3 FDREL 121 or 122 2 <hr style="width: 100%;"/> 16	Semester 3 <i>Take these courses:</i> MATH 316 4 PH 220 3 PH 250 1 FDAMF 101 3 FDREL 200 2 FDMAT 108T 1-3 <hr style="width: 100%;"/> 14-16	Semester 4 <i>Take these courses:</i> PH 291 2 PH 279 3 CHEM 106 4 FDSCI Issues 2 FDREL Scripture 2 FDENG 201 3 <hr style="width: 100%;"/> 16	Semester 5 <i>Take these courses:</i> PH 333 4 PH 328 2 PH 332 4 Elective Credit 3 FDREL Scripture 2 <hr style="width: 100%;"/> 15
Semester 6 <i>Take these courses:</i> PH 385 2 PH 336 2 PH 314 3 PH Elective 3 FDCA/FDWLD 2-3 FDSCI Issues 3 <hr style="width: 100%;"/> 15-16	Off-Track ***Choose 1: PH 398R or 1 PH 406 fall semester 1 <hr style="width: 100%;"/> 1	Semester 7 <i>Take these courses:</i> ***PH 406 1 PH 433 3 PH 412 3 BIO 180 4 FDCA/FDWLD 2-3 FDREL Elective 2 <hr style="width: 100%;"/> 15-16	Semester 8 <i>Take these courses:</i> PH 473 3 PH 488 1 BIO 181* 3 FDCNC 250 2 FDREL Elective 2 Elective Credit 4 <hr style="width: 100%;"/> 15	<i>Program Notes</i> *BIO 181 is not required, but would be beneficial and could be counted as elective credits.

Physics

Brigham Young University-Idaho 2014-2015

BS in Physics Education (870)

Take required Foundations courses

Major Requirements

No Grade Less Than C- in Major Courses

Education Core	Physics Core	Take these courses:	Program Notes:
<i>Take these courses:</i>	<i>Take these courses during your first 3 semesters:</i>	FDMAT 112*	*Note to students: FDMAT 112 needs to be taken to satisfy a major requirement as well as partially satisfy the Foundations Quantitative Reasoning requirement. Full completion of Foundations will also require FDMAT 108T.
ED 200 2	PH 121 3	MATH 113 4	
ED 304 3	PH 123 3	PH 127 3	
ED 361 3	PH 150 1	PH 279 3	
ED 461 3	PH 220 3	PH 311 3	
ED 492 10	PH 250 1	PH 314 3	
SPEED 360 2		PH 403 2	
23	11	PH 411 3	
		24	

Total Major Credits=37

Total Education Core Credits=23

This major also requires an education minor

This major is available on the following tracks:

Fall-Winter---- YES

Winter-Spring/Spring-Fall----

Freshman Sophomore YES/Junior Senior NO

Graduation Plan

BS in Physics Education (870)

Semester 1	Semester 2	Semester 3	Semester 4	Program Notes
<i>Take these courses:</i>	<i>Take these courses:</i>	<i>Take these courses:</i>	<i>Take these courses:</i>	PH 127 is a S/F only course
PH 150 1	PH 123 3	PH 220 3	PH 279 3	
PH 121 3	MATH 113 3	PH 250 1	ED 304 3	
PH 127* 3	ED Minor course 3	ED 200 3	ED Minor course 2	
FDSCI 101 2	FDENG 101 3	ED Minor course 3	FDAMF 101 3	
FDMAT 112 4	FDREL 121 or 122 2	FDSCI Issues 3	FDREL Scripture 2	
FDREL 121 or 122 2	FDSCI Issues 2	FDREL 200 2	FDENG 201 3	
15	16	FDMAT 108T 1-3	16	
		16-18		
<i>Semester 5</i>	<i>Semester 6</i>	<i>Semester 7</i>	<i>Semester 8</i>	
<i>Take these courses:</i>	<i>Take these courses:</i>	<i>Take these courses:</i>	<i>Take this course:</i>	
PH 311 3	PH 314 3	PH 403 2	ED 492 10	
PH 277 2	ED Minor course 3	PH 411 3	10	
ED 361 3	ED Minor course 3	PH 461 3		
FDCA/FDWLD 2-3	FDCA/FDWLD 2-3	SPEED 360 2		
FDREL Scripture 2	FDCNC 250 2	ED Minor course 3		
ED Minor course 3	FDREL Elective 2	FDREL Elective 2		
15-16	15-16	15		

Minor in Physics (104)

Minor Requirements

No Double Counting of Minor Courses

Take these courses:	Take 6 credits:	Program Notes:
MATH 215 4	PH 311 3	
PH 121 3	PH 314 3	
PH 123 3	PH 323 3	
PH 150 1	PH 324 3	
PH 220 3	PH 374 3	
PH 250 1	PH 433 3	
PH 279 3	6	
18		

Total Minor Credits=24

This minor is available on the following tracks:

Fall-Winter---- YES

Winter-Spring---- YES

Spring-Fall---- YES

Minor in Physics Education (178)

Minor Requirements

No Double Counting of Minor Courses

Take these courses:

PH 121	3
PH 123	3
PH 150	1
PH 220	3
PH 250	1
PH 279	3
PH 311	3
PH 314	3
	20

Program Notes:

Total Minor Credits=20

This minor is available on the following tracks:

Fall-Winter---- YES

Winter-Spring---- NO

Spring-Fall---- YES

Minor in Physical Science Education (182)

Minor Requirements

No Double Counting of Minor Courses

Take these courses:

CHEM 105	4
CHEM 106	4
PH 105	4
PH 106	4
	16

Take 1 course:

CHEM 150	5
CHEM 220	5
CHEM 351	4
	4

Program Notes:

Total Minor Credits=20

This minor is available on the following tracks:

Fall-Winter---- YES

Winter-Spring---- YES

Spring-Fall---- YES

Physics Concentration (D 129)

Concentration Requirements

No Double Counting of Concentration Courses

Take these courses:

MATH 215	4
MATH 316	4
PH 121	3
PH 123	3
PH 150	1
PH 220	3
PH 250	1
PH 279	3
PH 332	4
PH 333	4
PH 336	2
	32

Take these courses:

IDS 398R	1-3
IDS 499	2
	3

Program Notes:

Total Concentration Credits=35

This concentration is available on the following tracks:

Fall-Winter---- YES

Winter Spring---- Freshman/Sophomore- YES
Junior/Senior- NO

Spring-Fall---- Freshman/Sophomore- YES
Junior/Senior- NO

Physics

Brigham Young University–Idaho 2014-2015

Physics Pre-approved Clusters

Technical Physics		6400
<i>Take 12 Credits:</i>		
PH 121	Principles of Physics I	3
PH 123	Principles of Physics II	3
PH 150	Beginning Physics Lab	1
PH 220	Principles of Physics III	3
PH 250	Intermediate Physics Laboratory for Physics and Physical Science	1
PH 279	Modern Physics	3
PH 311	Physics by Inquiry I	3
PH 314	History/Philosophy of Science	<u>3</u>
Total Credits		12

Physics Exposure		6401
<i>Take 14 credits:</i>		
PH 105	Introductory Applied Physics I	4
PH 106	Introductory Applied Physics II	4
PH 311	Physics by Inquiry I	3
PH 314	History/Philosophy of Science	<u>3</u>
Total Credits		14

Physical Science and Mathematics		6800
<i>Take 12 credits from at least 2 of the following areas:</i>		
Chemistry		
Take any Chemistry class numbered 105 or higher	0-10	
(Chem 150 and Chem 153 cannot be taken with Chem 351 and/or Chem 352)		
Physics		
Take any Physics class numbered 105 or higher	0-10	
Geology		
Take any Geology class numbered 111 and 111L or higher	0-10	
Mathematics		
Take any Mathematics class numbered 111 or higher	0-10	
Total Credits		12

Course Descriptions

Credits*

- PH 101 Fundamentals of Physics (4:3:3)**
Principles of classical and modern physics as they relate to current concepts of the physical environment. This course includes a lab component. (Fall)
- PH 105 Introductory Applied Physics I (4:3:4)**
Prerequisites: MATH 109 or FDMAT 112 or FDMAT 110 and MATH 111
An introductory general physics course, including a lab component. Also, target students for this course include those interested in pre-med, dental, physical therapy, construction management, and so on. (Winter, Spring, Fall)
- PH 106 Introductory Applied Physics II (4:3:4)**
Prerequisite: PH 105
Second course in an introductory physics sequence. This course includes a lab component. Also, target students for this course include those interested in pre-med, dental, physical therapy, construction management, and so on. (Winter, Spring, Fall)
- PH 117 Descriptive Acoustics (3:2:2)**
Introductory acoustics course surveying the physical principles underlying the production and perception of sound, music, and speech. The course addresses basic measurements, vibrations, wave properties, superposition and spectra, perception and measurement, and room properties. Emphasis is placed on experience, reasoning, and observations. This course includes a lab component.
- PH 121 Principles of Physics I (3:2:3)**
Co-requisite: FDMAT 112
This course is the first semester of the calculus-based Principles of Physics sequence. The course is designed for students majoring in physics, engineering, chemistry, and mathematics. The course centers on mechanics, the study of forces and motion as described through Newton's three laws of motion and the concept of energy. (Winter, Spring, Fall)
- PH 123 Principles of Physics II (3:2:3)**
Prerequisite: PH 121
Co-requisites: MATH 113 or MATH 215
This course is the second semester of the Principles of Physics sequence. The course is designed for students majoring in physics, chemistry, and mathematics. The course covers topics in waves, thermodynamics, and optics. These areas of study are important in a wide variety of scientific disciplines. For example, an understanding of wave properties is essential in applications such as wireless communication as well as all aspects of acoustics. Thermodynamics has a variety of applications in engine design and heat transfer. Finally, principles of optics are involved in fiber-optic communication, instrument design, scanners, surveillance, etc. (Winter, Spring, Fall)

- PH 127 Introduction to Astronomy (3:2:2)**
Astronomy is the study of the heavens and the Earth as a planet. This course introduces students to the wonders of the heavens and the fundamental observations, concepts, and theories of modern astronomy. Students also learn how scientists discover this information. (Spring, Fall)
- PH 150 Beginning Physics Lab (1:0:3)**
Co-requisite: PH 121
This course introduces students to the basics of experimental physics. It is designed to help students learn to think analytically and to gain experience in doing common experiments in physics. It teaches students how to analyze data and numerically model common physics problems. (Winter, Spring, Fall)
- PH 220 Principles of Physics III (3:2:3)**
Prerequisite: PH 121
Co-requisites: MATH 113 or MATH 215
Third of a four semester sequence. Principles of electricity and magnetism with emphasis on combining intuition and past experience with mathematics to understand the laws of electricity and magnetism. (Principles of Physics III is intended for students majoring in Physics, Physics Education, Chemistry, Engineering, Mathematics/Computer Science majors.) (Winter, Spring, Fall)
- PH 223 Engineering Physics (4:3:2)**
Prerequisites: ME 204 or PH 121; and MATH 113 or MATH 215
This course is designed for students majoring in mechanical engineering. It is a one-semester calculus based physics course covering topics in waves, electricity, magnetism, and optics. These areas of study are important in a wide variety of engineering applications. For example, an understanding of wave properties is essential in the proper design of structures. A knowledge of electric and magnetic fields is required for any system that involves transmission of electrons for either communication or power generation purposes. Finally, principles of optics are involved in fiber-optic communication, instrument design, scanners, surveillance, etc. (Winter, Spring, Fall)
- PH 250 Intermediate Physics Lab (1:0:3)**
Prerequisite: PH 150
Co-requisite: PH 220
Intermediate Physics Laboratory for Physics and Physical Science Teaching majors, as well as experimental investigations into electricity and magnetism. (Winter, Spring, Fall)
- PH 277 Contemporary Issues in Astronomy (2:2:0)**
Prerequisite: PH 127
This 2 credit course explores areas of current research in astronomy. It builds on the principles of astronomy learned previously in PH 127. A working knowledge of college algebra is assumed. (Fall)

Physics

Brigham Young University–Idaho 2014-2015

<p>PH 279 Modern Physics (3:2:3) Prerequisite: PH 123 Co-requisite: PH 220 Fourth of the principles of Physics sequence. Introductory course dealing with the fundamental topics of modern physics, including special relativity, elementary quantum mechanics, nuclear physics, and some particle physics. (Winter, Spring)</p> <p>PH 291 Wave Physics (2:2:0) Co-requisites: PH 279 and MATH 316 or MATH 371 Physics course that reviews mathematical methods in the context of wave phenomena. Prepares students for the mathematical rigors of upper division physics. (Winter, Spring)</p> <p>PH 311 Physics by Inquiry I (3:2:3) Prerequisites: Junior level or permission of the instructor This hands-on course addresses selected topics in physics with emphasis on depth of understanding and developing skills essential to the scientific process. These skills include observation, interpretation, reasoning, generalizing predicting, questioning, and related communication skills. It provides an experience in education by inquiry and background for teaching as a process of inquiry. (Fall- odd years)</p> <p>PH 314 History and Philosophy of Science (3:3:0) Prerequisite: Completion of two FDSCI Issues courses This course describes modern science as a tool for studying the physical universe. It addresses three main philosophical questions: What is science? What ideas/concepts do we take for granted in science? How do scientists establish their claims? It uses the history of science, which shows how science actually developed, to address these critical questions. Successful completion of the course allows students to understand better and appreciate the nature of science, the purposes of scientific theory, and how science developed historically. This study helps students place the theories of modern science into proper historical and intellectual context. (Winter, Fall)</p> <p>PH 323 Solid State Physics (3:3:0) Prerequisites: MATH 316 and PH 279 This course introduces the basic mathematical and conceptual tools necessary to study the structural, electrical, thermal, and mechanical properties of matter in the solid state. (Fall- odd years)</p> <p>PH 324 Nuclear and Particle Physics (3:3:0) Prerequisite: PH 279 This is a junior level survey course which introduces the physics of atomic nuclei and elementary particles. (Fall- even years)</p> <p>PH 328 Introduction to Physics Research (2:2:0) Prerequisites: PH 220, FDENG 201; and MATH 314 or MATH 316 This course acquaints students with possible career tracks in physics. Introduces topics associated with becoming a member of a professional community, including presentation and other written communication. Students begin developing skills for job or graduate school applications and interviews. Introduces students to the research process in physics by beginning the senior thesis or internship process. (Fall)</p> <p>PH 332 Classical Mechanics (4:4:1) Prerequisites: PH 291; and MATH 316 or MATH 371 This is a junior level course applying Newton's Laws of Motion in a wide variety of applications. (Fall)</p> <p>PH 333 Electricity and Magnetism (4:4:1) Prerequisites: PH 220 and one of the following: MATH 316 or MATH 371 This is a junior level course which covers electromagnetic theory. (Fall)</p> <p>PH 336 Advanced Physics Lab (2:0:6) Prerequisite: PH 250 This course prepares students to do experimental work for their internship and/or research. It focuses on analyzing experimental data, but also covers other aspects of experimental design in common equipment used in physics experiments. (Winter)</p>	<p>PH 374 Astrophysics (3:3:0) Prerequisites: PH 279 and PH 332 A junior level mathematically based course designed to introduce students to the field of astrophysics. (Winter- even years)</p> <p>PH 375 Principles of Optics (3:3:0) Prerequisites: PH 291; and MATH 316 or MATH 472 This course covers the fundamental principles of optics. Beginning with Maxwell's Equations, the electromagnetic theory of light is studied. Fundamentals of geometric optics are revisited using electromagnetic theory. Phenomena such as lens aberrations, polarization, interference, diffraction, and coherence are discussed. The course may also cover other topics such as Fourier optics and lasers. (Winter- odd years)</p> <p>PH 385 Numerical Modeling in Physics (2:1:3) Prerequisite: PH 279 and PH 291 A lab course that applies numerical modeling and methods to a variety of modern topics in physics. MATLAB is used in this course. (Winter)</p> <p>PH 398R Physics Internship (1:0:0) Repeatable Course: may earn maximum of 2 credits A professional internship providing the student with job experience in a physics-related field. (Spring)</p> <p>PH 403 Methods of Physics Teaching (2:2:0) Prerequisites: PH 279 and PH 314 Methods and philosophy of teaching physics principles in a high school setting. (Fall)</p> <p>PH 406 Physics Senior Research (1:1:0) Prerequisite: Instructor Permission Students propose, develop the background for, and execute a research project culminating in production of a thesis (written in PH 488), either individually or in cooperation with other students. This project is in lieu of (or in addition to with approval) a professional internship. (Spring)</p> <p>PH 411 Physics by Inquiry II (3:2:3) Prerequisite: PH 311 This hands-on course continues coverage in selected topics in physics with emphasis on depth of understanding and developing skills essential to the scientific process. These skills include observation, interpretation, reasoning, generalizing predicting, questioning, and related communication skills. It provides an experience in education by inquiry and background for teaching as a process of inquiry. Students will develop a personal set of lesson plans/teachers guide for students own portfolio. Students may have the opportunity to develop questioning strategies and practice them by acting as staff and practice appropriate questioning skills by assisting with checkouts. (Fall- odd years)</p> <p>PH 412 Thermal and Statistical Physics (3:3:0) Prerequisite: PH 432 This is a senior level course covering classical thermodynamics and statistical mechanics. This class builds upon and expands some of the material that was covered in PH 123. (Fall)</p> <p>PH 433 Quantum Mechanics (3:3:0) Prerequisites: PH 279, PH 291; and MATH 316 or MATH 371 This is a senior-level course which covers an introduction to the theory of quantum mechanics. (Fall)</p> <p>PH 473 Atomic Physics (3:3:0) Prerequisite: PH 433 This is a senior-level course which covers applications of the theory of quantum mechanics to atomic and solid state physics topics. (Winter)</p> <p>PH 488 Senior Thesis (1:1:0) Prerequisite: Instructor permission A course focused on bringing a student's research experience to conclusion by writing the formal thesis and presenting its contents to the faculty and other students. (Winter)</p>
--	---