BS in Applied Physics: Acoustics (694834) MAP Sheet

Physical and Mathematical Sciences, Physics and Astronomy

For students entering the degree program during the 2024-2025 curricular year.

University Core and Graduation Requirements

University Core Requirements:

Requirements	#Classes	Hours	Classes
Religion Cornerstones			
Teachings and Doctrine of The Book of Mormon	1	2.0	REL A 275
Jesus Christ and the Everlasting Gospel	1	2.0	REL A 250
Foundations of the Restoration	1	2.0	REL C 225
The Eternal Family	1	2.0	REL C 200
The Individual and Society			
American Heritage	1-2	3-6.0	from approved list
Global and Cultural Awareness	1	3.0	from approved list
Skills			
First Year Writing	1	3.0	from approved list
Advanced Written and Oral Communications	1	3.0	PHSCS 416 or WRTG 316
Quantitative Reasoning	1	4.0	MATH 112*
Languages of Learning (Math or Language)	1	4.0	MATH 112*
Arts, Letters, and Sciences			
Civilization 1	1	3.0	from approved list
Civilization 2	1	3.0	from approved list
Arts	1	3.0	from approved list
Letters	1	3.0	from approved list
Biological Science	1	3-4.0	from approved list
Physical Science	1	3.0	PHSCS 222*
Social Science	1	3.0	from approved list
Core Enrichment: Electives			
Religion Electives	3-4	6.0	from approved list
Open Electives	Variable	Variable	personal choice

*THESE CLASSES FILL BOTH UNIVERSITY CORE AND PROGRAM REQUIREMENTS (7 hours overlap)

Graduation Requirements:

Minimum residence hours required	30.0
Minimum hours needed to graduate	120.0

Suggested Sequence of Courses

FRESHMAN YEAR

1st Semester

PHSCS 121 (FWSp)	3.0
PHSCS 191 (F)	0.5
MATH 112 (FWSpSu)	4.0
First-year Writing	3.0
UNIV 101	2.0
Religion Cornerstone course	2.0
Total Hours	**14.5**

2nd Semester

PHSCS 123 (FWSp)	3.0
MATH 113 (FWSpSu)	4.0
C S 111 (FWSp)	3.0
American Heritage	3.0
Religion Cornerstone course	2.0
Total Hours	**15.0**

SOPHOMORE YEAR

3rd Semester

PHSCS 220 (FWSp)	3.0
PHSCS 225 (FW)*	2.0
PHSCS 230 (FW)	1.0
PHSCS 291 (F)	0.5
MATH 302 (FW)**	4.0
Arts, Letters, and Sciences GE	3.0
Religion Cornerstone course	2.0
Total Hours	**15.5**

*It's highly recommended to take PHSCS 220 and PHSCS 225 at the same time.

**The MATH 213/215/314/334 (9 cr) sequence can be taken in place of the MATH 302/303 (8 cr) sequence.

4th Semester

PHSCS 222 (FWSp)	3.0
PHSCS 240 (FW)	2.0
MATH 303 (FW)	4.0
General Elective	3.0
Religion cornerstone course	2.0
Total Hours	**14.0**

JUNIOR YEAR

5th Semester

PHSCS 245 (FW)	2.0
PHSCS 318 (FW)	3.0
PHSCS 321 (FSp)	3.0
PHSCS 330 (FSp)	1.0
Arts, Letters, and Sciences GE	3.0
Religion elective	2.0
Total Hours	**14.0**

6th Semester

PHSCS 430 (WSu)	1.0
PHSCS 461	3.0
Arts, Letters, and Sciences GE	3.0
Arts, Letters, and Sciences GE	3.0
Global & Cultural Awareness GE	3.0
Acoustics Elective 1	3.0
Total Hours	**16.0**

SENIOR YEAR

7th Semester

PHSCS 441 (FSp)	3.0
PHSCS 561 (encouraged for Req 2)	3.0
Acoustics Elective 2	3.0
Arts, Letters, and Sciences GE	3.0
General Elective	1.0
Religion Elective	2.0
Total Hours	**15.0**

8th Semester

PHSCS 416 (W) or WRTG 316	3.0
Religion Elective	2.0
Acoustics elective 3	3.0
PHSCS 492R or PHSCS 498R	2.0
General Elective	3.0
General Elective	3.0
Total Hours	**16.0**

Note: Students are encouraged to complete an average of 15 credit hours each semester or 30 credit hours each year, which could include spring and/or summer terms. Taking fewer credits substantially increases the cost and the number of semesters to graduate.

Requirement 1- Complete 18 Courses

C S 111 - Intro to Computer Science 3.0
MATH 113 - Calculus 2 4.0
PHSCS 121 - Intro to Newtonian Mechanics 3.0
PHSCS 123 - Intro to Waves, Optics, Thermo 3.0
PHSCS 191 - Intro Phscs Careers & Rsrch 1 0.5
PHSCS 220 - Intro Electricity & Magnetism 3.0
PHSCS 222 - Modern Physics 3.0
PHSCS 225 - Intro to Experimental Physics 2.0
PHSCS 230 - Computational Physics Lab 1 1.0
PHSCS 240 - Dsgn, Fabricatn, Sci Apparatus 2.0
PHSCS 245 - Experiments in Contemp Phscs 2.0
PHSCS 291 - Intro Phscs Careers & Rsrch 2 0.5
PHSCS 318 - Intro Math Physics 3.0
PHSCS 321 - Mechanics 3.0
PHSCS 330 - Computational Physics Lab 2 1.0
PHSCS 430 - Computational Physics Lab 3 1.0
PHSCS 441 - Electricity & Magnetism 3.0
PHSCS 461 – Introduction to Acoustics 3.0

Requirement 2 — Complete 1 Course

PHSCS 442 - Electrodynamics 3.0
PHSCS 471 - Principles of Optics 3.0
PHSCS 561 – Fundamentals of Acoustics 3.0

Requirement 3 — Obtain confirmation from your advisement center that you have completed the following:

After gaining department advisor's approval of courses selected to define an option, complete an additional 9 hours of electives (cannot include any courses already taken above). These 9 hours must consist of a coherent set of upper-division courses with an identified educational goal. Six hours must be upper division (300-level or above); three hours must be 200-level or above.

Requirement 4 — Complete 1 of 2 Options

Option 4.1 — Complete 2 Courses

MATH 302 - Math for Engr 1 4.0
MATH 303 - Math for Engineering 2 4.0

Option 4.2 — Complete 4 Courses

MATH 213 - Elementary Linear Algebra 2.0
MATH 215 - Computational Linear Algebra 1.0
MATH 314 - Calculus of Several Variables 3.0
MATH 334 - Ordinary Differential Equation 3.0

Requirement 5 — Complete 2 hours

Complete a capstone project or senior thesis including the following:
A. Choose a research mentor within the acoustics research group as early as possible. It is best to start as a freshman or sophomore. Interdisciplinary acoustics-related work in other departments or in internships is possible.

Option 5.1 — Complete up to 2 hours

B. Complete 2 hours of one of the following:
PHSCS 492R - Capstone in Applied Phscs - *You may take up to 2.0 credit hours* 2.0
PHSCS 498R - Senior Thesis - *You may take up to 2.0 credit hours* 0.5v

CAREER OPPORTUNITIES:

The Applied Physics: Acoustics degree is an excellent degree for those who may continue study in acoustics as a scientist, engineer, or consultant after the BS working in national or government labs (Los Alamos, Sandia, NASA, Air Force Research Lab, Army Research Lab, Naval Undersea Warfare Center), government contractors (Raytheon, Lockheed Martin, Northrop Grumman, Penn State Applied Research Lab, Univ. of Texas Applied Research Labs), acoustical product companies (Amazon, Apple, Bose, JBL, Meta, Motorola), acoustical consulting (The Church of Jesus Christ of Latter-day Saints, MD Acoustics, Spectrum Engineers), or companies concerned with noise or vibration (Caterpillar, Ford). Interestingly, the places listed in parentheses are locations where graduates from BYU in acoustics have gone to work. Those who graduate may go to work right after their BS or they may go on to graduate school.

THE DISCIPLINE:

Acoustics is defined as the science that deals with the production, control, transmission, reception, and effects of sound (as defined by Merriam-Webster). While acoustics does include the study of musical instruments and architectural spaces, it also covers a vast range of topics, including: noise control, SONAR for submarine navigation, ultrasounds for medical imaging, thermoacoustic refrigeration, seismology, bioacoustics, and electroacoustic communication.

MAP DISCLAIMER

While every reasonable effort is made to ensure accuracy, there are some student populations that could have exceptions to listed requirements. Please refer to the university catalog and your college advisement center/department for complete guidelines.

DEPARTMENT INFORMATION

FACULTY ADVISORS ASSIGNED BY LAST TWO DIGITS OF BYU ID NUMBER.
CONTACT:

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ADVISEMENT CENTER INFORMATION

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