

Physics, BS - Applied and Theoretical Physics Concentration

- All College of Science degrees require at least 120 credit hours.
- 36 of those 120 credit hours must be taken at 300 level or higher.
- 12 credit hours of 300 level and above must be taken in the major or 6 credit hours in the major and 6 credit hours in the minor (if chosen).
- 12 of the last 18 credit hours must be taken at UAH, with an overall 25% of coursework taken at UAH.
- No more than 60 credit hours from a two-year college can be applied toward a UAH degree.
- A C- or better is required for all College of Science prerequisite courses, unless otherwise noted.

For UAH degree requirements and graduation application instructions, see here (<http://catalog.uah.edu/undergrad/policies-procedures/application-graduation/>).

Charger Foundations

Code	Title	Semester Hours
Area I: Freshman Composition		3-6
EH 101 or EH 101S	COLLEGE WRITING I COLLEGE WRITING I W/STUDIO	
EH 102	COLLEGE WRITING II	
EH 103	ACCELERATED COLLEGE WRITING	
EH 105	HONORS ENGLISH SEMINAR	
Area II: Humanities and Fine Arts*		12
Fine Arts		3
ARH 100	ARH SUR: ANCIENT-MEDIEVAL	
ARH 101	ARH SUR: RENAISSANCE-MODERN	
ARH 103	ARH SUR: WORLD ART	
ARS 160	DRAWING: FOUNDATIONS	
TH 122	THEATRE APPRECIATION	
TH 123	INTRO TO FILM STUDIES	
MU 100	INTRO TO MUSIC LITERATURE	
Literature		3-6
EH 207	READINGS LITERATURE/CULTURE I	
EH 208	READINGS LITERATURE/CULTURE 2	
EH 209	HONORS SEM READINGS LIT/CUL I	
EH 210	HONORS SEM READINGS LIT/CUL 2	
EH 241	LITERATURE WITHOUT BORDERS	
EH 242	MYTHOLOGY	
EH 243	PROTEST LITERATURE	
EH 244	HEROES &/OR MONSTERS	
EH 245	LOVE &/OR ROMANCE	
EH 246	SPECULATIVE REALITIES	
Humanities and Fine Arts		3-6
CM 113	Intro to Rhetorical Communication	
WLC 101S or WLC 101A or WLC 101F or WLC 101G or WLC 101J	INTRO FOREIGN LANG I: SPANISH INTRO FOREIGN LANG I: ARABIC INTRO FOREIGN LANG I:FRENCH INTRO FOREIGN LANG I:GERMAN INTRO FOREIGN LANG I:JAPANESE	

or WLC 101R	INTRO FOREIGN LANG I:RUSSIAN	
WLC 102S	INTRO FOREIGN LANG II:SPANISH	
or WLC 102A	INTRO FOREIGN LANG II: ARABIC	
or WLC 102F	INTRO FOREIGN LANG II:FRENCH	
or WLC 102G	INTRO FOREIGN LANG II:GERMAN	
or WLC 102J	INTRO FOREIGN LANG II:JAPANESE	
or WLC 102R	INTRO FOREIGN LANG II:RUSSIAN	
WLC 201S	INTERM FOREIGN LANG:SPANISH	
or WLC 201A	INTERM FOREIGN LANG I: ARABIC	
or WLC 201F	INTERM FOREIGN LANG:FRENCH	
or WLC 201G	INTERM FOREIGN LANG:GERMAN	
or WLC 201J	INTERM FOREIGN LANG: JAPANESE	
or WLC 201R	INTERM FOREIGN LANG:RUSSIAN	
WLC 202S	INTERM FOREIGN LANG II:SPANISH	
or WLC 202A	INTERM FOREIGN LANG II: ARABIC	
or WLC 202F	INTERM FOREIGN LANG II:FRENCH	
or WLC 202G	INTERM FOREIGN LANG II:GERMAN	
or WLC 202J	INTERM FORGN LANG II:JAPANESE	
or WLC 202R	INTERM FOREIGN LANG II:RUSSIAN	
WLC 204	INTERNATIONAL CINEMA	
PHL 101	INTRODUCTION TO PHILOSOPHY	
PHL 102	INTRO TO ETHICS	
PHL 103	INTRODUCTION TO LOGIC	
PHL 150	TECH, SCIENCE & HUMAN VALUES	
WGS 200	INTRO WOMENS/GENDER/SEXLTU STU	
AMS 229	ANCIENT & MEDIEVAL WORLDS	
ARH 100	ARH SUR: ANCIENT-MEDIEVAL	
ARH 101	ARH SUR: RENAISSANCE-MODERN	
ARH 103	ARH SUR: WORLD ART	
ARS 160	DRAWING: FOUNDATIONS	
TH 122	THEATRE APPRECIATION	
TH 123	INTRO TO FILM STUDIES	
MU 100	INTRO TO MUSIC LITERATURE	
Area III: Mathematics and Sciences		11-12
Mathematics		3-4
MA 105	NATURE OF MATHEMATICS	
MA 107	ALGEBRA WITH APPLICATIONS	
MA 110	FINITE MATHEMATICS	
MA 112	PRECALCULUS ALGEBRA	
MA 113	PRECALCULUS TRIGONOMETRY	
MA 115	PRECALCULUS ALGEBRA & TRIG	
MA 120	MATH PROFESSIONAL APPLICATIONS	
MA 171	CALCULUS A	
MA 181	INTRODUCTION TO STATISTICS	
Natural Sciences (Lab)		8
AST 100	SURVEY OF ASTRONOMY	
AST 106	EXPLORING THE COSMOS I	
AST 107	EXPLORING THE COSMOS II	
BYS 109	FUNDAMENTALS OF BIOLOGY	
BYS 119 & BYS 121	PRINCIPLES OF BIOLOGY and LABORATORY	

BYS 120 & BYS 122	ORGANISMAL BIOLOGY and ORGANISMAL BIOLOGY LAB
BYS 215	HUMAN ANATOMY & PHYSIOLOGY I
CH 101 & CH 105	INTRO TO CHEMISTRY and INTRO CHEMISTRY LAB
CH 121 & CH 125	GENERAL CHEMISTRY I and GENERAL CHEMISTRY LAB I
CH 123 & CH 126	GENERAL CHEMISTRY II and GENERAL CHEMISTRY LAB II
CH 151 & CH 105	GENERAL, ORGANIC, BIOCHEMISTRY and INTRO CHEMISTRY LAB
PH 100	CONCEPTUAL PHYSICS
PH 101	GENERAL PHYSICS I
PH 102	GENERAL PHYSICS II
PH 111 & PH 114	GEN PHYSICS W/CALCULUS I and GENERAL PHYSICS LAB I
PH 112 & PH 115	GEN PHYSICS W/CALC II and GENERAL PHYSICS LAB II
PH 113 & PH 116	GEN PHYSICS W/CALC III and GENERAL PHYSICS LAB III

Area IV: History and Social and Behavioral Sciences* **12**

History 3-6

HY 103	WORLD HISTORY TO 1500
HY 104	WORLD HISTORY SINCE 1500
HY 221	UNITED STATES TO 1877
HY 222	UNITED STATES SINCE 1877

Social and Behavioral Sciences 6-9

AES 105	WORLD REGIONAL GEOGRAPHY
AES 110	PRINCIPLES OF HUMAN GEOGRAPHY
ECN 142	PRINC OF MACROECONOMICS
ECN 143	PRINC OF MICROECONOMICS
GS 200	GLOBAL SYSTEMS AND CULTURES
PSC 101	INTRO TO AMERICAN GOVERNMENT
PSC 102	INTRO TO COMPARATIVE POLITICS
PSC 260	INTRODUCTION TO INTERNATIONAL RELATIONS
PY 101	GENERAL PSYCHOLOGY I
PY 201	LIFE-SPAN DEVELOPMENT
SOC 100	INTRO TO SOCIOLOGY
SOC 102	ANALYSIS OF SOCIAL PROBLEMS
SOC 103	INTRO TO CRIMINOLOGY

Area V: Pre-Professional

Code	Title	Semester Hours
For Physics & Astronomy Majors (APH)		30
Courses in this area may also fulfill Charger Foundations requirements		
First Year Experience:		1
FYE 101S	CHARGER SUCCESS - SCIENCE	
Computer Programming: choose one		3
CS 100	INTRO COMPUTERS & PROGRAM	
or CS 102	INTRO TO C PROGRAMMING	
or CS 103	INTRO PROGRAMMING USING JAVA	
or CS 104	INTRO TO CS USING PYTHON	

Chemistry Sequence: 8

CH 121 & CH 125	GENERAL CHEMISTRY I and GENERAL CHEMISTRY LAB I	
CH 123 & CH 126	GENERAL CHEMISTRY II and GENERAL CHEMISTRY LAB II	
Mathematics: **		18
MA 171	CALCULUS A	
MA 172	CALCULUS B	
MA 201	CALCULUS C	
MA 238	APPL DIFFERENTIAL EQUATIONS	
MA 244	INTRO TO LINEAR ALGEBRA	

Major Requirements

Code	Title	Semester Hours
Physics core:		28
PH 110	FRONTIERS IN SCIENCE	
PH 111 & PH 114	GEN PHYSICS W/CALCULUS I and GENERAL PHYSICS LAB I	
PH 112 & PH 115	GEN PHYSICS W/CALC II and GENERAL PHYSICS LAB II	
PH 113 & PH 116	GEN PHYSICS W/CALC III and GENERAL PHYSICS LAB III	
PH 251	SPECIAL RELATIVITY	
PH 301	INTERMEDIATE MECHANICS	
PH 305	MATH METHODS IN PHYSICS	
PH 351	INTRODUCTION TO MODERN PHYSICS	
PH 499	PHYSICS PRACTICUM	
Applied and Theoretical Concentration Requirements:		19
PH 310	INTERMEDIATE LAB I	
PH 311	INTERMEDIATE LAB II	
PH 421	THERMAL & STATISTICAL PHYSICS	
PH 431	INTERM ELECTRICI & MAGNETISM I	
PH 432	INTERM ELECTRIC & MAGNETISM II	
PH 451	INTRO QUANTUM MECHANICS I	
PH 452	INTRO QUANTUM MECHANICS II	

General Electives

Code	Title	Semester Hours
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Additional courses to reach 120 credit hours. Electives can be taken from any department and do not have to be taken in your major or minor.
No more than 4 credits of 100-level HPE courses can count toward degree requirements.

Code	Title	Semester Hours
Total Degree Hours		120

* Students must take one literature and one history course. Students must also take either a second literature or history course to complete a sequence. Acceptable Literature sequences must include one early literature (EH 207 or EH 242 or EH 209) and one later literature (EH 208 or EH 210). Acceptable history sequences are (HY 103 + HY 104), or (HY 221 + HY 222)

** Based on Math placement, (<http://www.uah.edu/science/departments/math/undergraduate-students/placement/>) prerequisite MA 112 and/or MA 113 Mathematics courses may be required.

Note: This is only an example and variations are possible. Please work with your advisor (<https://www.uah.edu/science/academic-advising/>) as some courses are only offered one semester out of the academic year.

Year 1		Semester Hours
Fall		
FYE 101S	CHARGER SUCCESS - SCIENCE ^{FA}	1
CH 121 & CH 125	GENERAL CHEMISTRY I and GENERAL CHEMISTRY LAB I	4
MA 171	CALCULUS A	4
PH 110	FRONTIERS IN SCIENCE ^{FA}	3
EH 101	COLLEGE WRITING I	3
Term Semester Hours:		15
Spring		
CH 123 & CH 126	GENERAL CHEMISTRY II and GENERAL CHEMISTRY LAB II	4
MA 172	CALCULUS B	4
PH 111 & PH 114	GEN PHYSICS W/CALCULUS I and GENERAL PHYSICS LAB I	4
EH 102	COLLEGE WRITING II	3
Term Semester Hours:		15
Year 2		
Fall		
MA 201	CALCULUS C	4
PH 112 & PH 115	GEN PHYSICS W/CALC II and GENERAL PHYSICS LAB II	4
CS 104 or CS 102	INTRO TO CS USING PYTHON or INTRO TO C PROGRAMMING	3
Social and Behavioral Science		3
General Elective		2
Term Semester Hours:		16
Spring		
MA 238	APPL DIFFERENTIAL EQUATIONS	3
PH 113 & PH 116	GEN PHYSICS W/CALC III and GENERAL PHYSICS LAB III	4
PH 251	SPECIAL RELATIVITY ^{SP}	1
Social and Behavioral Science		3
Non-Literature Humanity		3
General Elective		1
Term Semester Hours:		15
Year 3		
Fall		
MA 244	INTRO TO LINEAR ALGEBRA	3
PH 306	APPLIED PHYSICS ^{FA}	3
PH 310	INTERMEDIATE LAB I ^{FA}	2
PH 351	INTRODUCTION TO MODERN PHYSICS ^{FA}	3
Literature		3
Term Semester Hours:		14
Spring		
PH 301	INTERMEDIATE MECHANICS ^{SP}	3
PH 305	MATH METHODS IN PHYSICS ^{SP}	3
PH 311	INTERMEDIATE LAB II ^{SP}	2
PH 421	THERMAL STATISTICAL PHYSICS ^{SP}	3
History		3

General Elective		1
Term Semester Hours:		15
Year 4		
Fall		
PH 431	INTERM ELECTRICI MAGNETISM I ^{FA}	3
PH 451	INTRO QUANTUM MECHANICS I ^{FA}	3
History		3
Humanities, 2nd Fine art or 2nd Literature		3
General Elective (300+ or 400+ course)		3
Term Semester Hours:		15
Spring		
PH 432	INTERM ELECTRIC MAGNETISM II ^{SP}	3
PH 452	INTRO QUANTUM MECHANICS II ^{SP}	3
PH 499	PHYSICS PRACTICUM	3
Fine Art		3
General Elective		3
Term Semester Hours:		15
Total Semester Hours:		120

FA Course is historically offered only in Fall semesters.

SP Course is historically offered only in Spring semesters.