

Academic Map: Physics, Mathematical Physics

Department: _____ Physics and Astronomy _____ **Degree:** _____ BS _____
Program/Major: _____ Physics _____
Track/Emphasis: _____ Mathematical Physics _____
Does this program require a minor? (Yes/No) _____ No _____

Important program information in the online *Undergraduate Bulletin*:

UCA Core Requirements: <http://uca.edu/ubulletin2015/general-policies-information/uca-core/>
LD Core Check Sheet: <http://uca.edu/ubulletin/ldcore/>
Degree Requirements: <http://uca.edu/ubulletin2015/general-policies-information/degree-requirements/>
Program Description: <http://uca.edu/ubulletin2015/colleges-departments-programs/college-of-natural-sciences-and-mathematics/department-of-physics-and-astronomy/>
Course Descriptions: <http://uca.edu/ubulletin2015/courses/>

This degree program requires a total of **120** semester credit hours, including at least **40** upper-division credit hours.

Comparable courses in the Arkansas Course Transfer System (ACTS) are cross-referenced in the ACTS column of each semester block below; a [core link](http://uca.edu/ubulletin/ldcore/) (<http://uca.edu/ubulletin/ldcore/>) takes the user to the *Undergraduate Bulletin's* UCA Lower-Division Core check sheet, where UCA Core options and ACTS course numbers are listed in full; an [acts link](http://uca.edu/ubulletin/arkansas-course-transfer-system/) takes the user to the *Undergraduate Bulletin's* ACTS page (<http://uca.edu/ubulletin/arkansas-course-transfer-system/>) for additional information and a UCA-ACTS crosswalk.

Year 1

Fall – Semester 1 (credit hours: 15)

SUBJ	NUM	TITLE	SCH	ACTS
PHYS	1441	University Physics 1	4	PHYS2034
MATH	1496	Calculus I	4	MATH2405
WRTG	1310	Introduction to College Writing	3	ENGL1013
		LD UCA Core ¹	3	core link
		General Elective Course	1	

Spring – Semester 2 (credit hours: 15)

SUBJ	NUM	TITLE	SCH	ACTS
PHYS	1442	University Physics 2	4	PHYS2044
MATH	1497	Calculus II	4	MATH2505
WRTG ENGL	1320 1320	Academic Writing and Research or Interdisciplinary Writing and Research or Other approved alternative (LD UCA Core: Research/Writing) ¹	3	ENGL1023 ENGL1023 core link
		LD UCA Core ¹	3	core link
		General Elective Course	1	

Year 2**Fall – Semester 3 (credit hours: 17)**

SUBJ	NUM	TITLE	SCH	ACTS
PHYS	2443	University Physics 3	4	
MATH	2471	Calculus III	4	MATH2603
MATH	4371	Introduction to Probability (UD UCA Core: R)	3	
		LD UCA Core ¹	3	core link
		LD UCA Core ¹	3	core link

Spring – Semester 4 (credit hours: 15)

SUBJ	NUM	TITLE	SCH	ACTS
PHYS	3341	Mathematical Methods in Physics	3	
MATH	3331	Ordinary Differential Equations (UD UCA Core: C)	3	
		LD UCA Core ¹	3	core link
		LD UCA Core ¹	3	core link
		LD UCA Core ¹	3	core link

Year 3**Fall – Semester 5 (credit hours: 15)**

SUBJ	NUM	TITLE	SCH	ACTS
PHYS	3210	Experiments in Physics 1	2	
PHYS	3342	Mechanics	3	
PHYS	3353 3360	Quantum Mechanics 1 or Electromagnetism 1	3	
BIOL	1400	Exploring Concepts in Biology Approved alternative (LD UCA Core: Life Science) ¹	4	BIOL1004
WRTG	3310	Technical Writing (UD UCA Core: C)	3	

Spring – Semester 6 (credit hours: 17)

SUBJ	NUM	TITLE	SCH	ACTS
PHYS	3220	Experiments in Physics 2	2	
PHYS	3343	Thermal Physics	3	
PHYS	3354 3361	Quantum Mechanics 2 or Electromagnetism 2	3	
MATH	4385	Complex Analysis	3	
		Math Elective ²	3	
PHIL	3320 3325	Ethics (UD UCA Core: I, R) or Political Philosophy (UD UCA Core: I, R)	3	

Year 4**Fall – Semester 7 (Credit hours: 15)**

SUBJ	NUM	TITLE	SCH	ACTS
PHYS	4111	Senior Capstone 1	1	

SUBJ	NUM	TITLE	SCH	ACTS
PHYS ³	3360 3353	Electromagnetism 1 or Quantum Mechanics 1	3	
PHYS	4341	Advanced Mathematical Physics	3	
MATH	4362	Advanced Calculus I	3	
		General Elective Course	3	
		General Elective Course	2	

Spring – Semester 8 (Credit hours: 11)

SUBJ	NUM	TITLE	SCH	ACTS
PHYS	4211	Senior Capstone 2 (UD UCA Core: Z)	2	
PHYS ³	3361 3354	Electromagnetism 2 or Quantum Mechanics 2	3	
PHYS	4351	Computational Physics	3	
MATH	4363	Advanced Calculus II	3	

SIGNED – DEPARTMENT CHAIR

DATE

SIGNED – COLLEGE DEAN

DATE

To be completed by the advisor when an Eight-Semester plan is accepted by the student:

If applicable, has student selected a minor? Type “x” as appropriate. _____ No _____ Yes

If “yes,” specify: _____

Notes

¹ See appropriate choices, alternatives, or substitutions under “UCA Core” in the *Undergraduate Bulletin*. Prior to completion of 30 semester hours, a student must complete a UCA Core course designated as a First-Year Seminar (FYS) in Critical Inquiry, Diversity, or Responsible Living. The student will also need to complete major, minor, or general elective courses designated as fulfilling the upper-division and capstone requirements of the UCA Core. See annotations in this Academic Map for courses in the major that fulfill the upper-division requirements. Consult the *Undergraduate Bulletin* and your academic advisor for other available courses.

² MATH elective courses must be approved by the Chair of the Department of Physics and Astronomy.

³ Both sequences, PHYS 3360 and 3361, and PHYS 3353 and 3354 must be completed.