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:	https://uca.edu/ubulletin/general-policies-information/uca-core/
LD UCA Core Check Sheet:	https://uca.edu/academicbulletins/ld-uca-core/
UD UCA Core Course List:	https://uca.edu/academicbulletins/ud-uca-core/
Degree Requirements:	https://uca.edu/ubulletin/general-policies-information/degree-requirements/
Program Description:	https://uca.edu/ubulletin/colleges-departments-programs/college-of-natural-sciences-and-mathematics/department-of-physics-and-astronomy/
Course Descriptions:	https://uca.edu/ubulletin/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 (https://uca.edu/academicbulletins/ld-uca-core/) 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 takes the user to the *Undergraduate Bulletin*'s ACTS page (https://uca.edu/academicbulletins/acts/) for additional information and a UCA-ACTS crosswalk.

Scholarship recipients: Please be aware of eligibility criteria for your scholarship(s). In particular, pay attention to (1) the enrollment requirements each semester for disbursement of your scholarship(s) and (2) the number of hours and GPA required each semester and/or year for renewal of your scholarship(s). Some Academic Maps may suggest enrollment in fewer hours than required for disbursement of your scholarship(s). In such cases, work with your academic advisor to adjust your schedule to meet requirements most efficiently. Contact the Office of Student Financial Aid at (501) 450-3140 with any questions regarding enrollment/renewal requirements of your scholarship(s). For online information resources, see endnote [1].

Year 1

Fall – Semester 1 (credit hours: 14)

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[2]	3	core link

Spring – Semester 2 (credit hours: 14)

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)[2]	3	ENGL1023 ENGL1023 core link
		LD UCA Core[2]	3	core link

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[2]	3	core link
		LD UCA Core[2]	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[2]	3	core link
		LD UCA Core[2]	3	core link
		LD UCA Core[2]	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 or Approved alternative (LD UCA Core: Life Science)[2]	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[3]	3	
		General Elective Course (UD UCA Core: D or I as needed)	3	

Year 4

Fall – Semester 7 (Credit hours: 16)

SUBJ	NUM	TITLE	SCH	ACTS
PHYS	4111	Senior Capstone 1	1	
PHYS	3360 3353[4]	Electromagnetism 1 or Quantum Mechanics 1	3	

SUBJ	NUM	TITLE	SCH	ACTS
PHYS	4341	Advanced Mathematical Physics	3	
MATH	4362	Advanced Calculus I	3	
		General Elective Course (UD UCA Core: D or I as needed)	3	
		General Elective Course	3	

Spring – Semester 8 (Credit hours: 12)

SUBJ	NUM	TITLE	SCH	ACTS
PHYS	4211	Senior Capstone 2 (UD UCA Core: Z)	2	
PHYS[4]	3361 3354	Electromagnetism 2 or Quantum Mechanics 2	3	
PHYS	4351	Computational Physics	3	
MATH	4363	Advanced Calculus II	3	
		General Elective Course	1	

_____ _____

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 online information resources for UCA scholarships at https://uca.edu/scholarships/ and for state scholarships at https://scholarships.adhe.edu/scholarships-and-programs/a-z/.

[2] 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.

[3] MATH elective courses must be approved by the Chair of the Department of Physics and Astronomy.

[4] Both sequences – PHYS 3360 and 3361, and PHYS 3353 and 3354 – must be completed.