

Academic Map: Physics, Mathematical Physics (Calculus Ready)

Department: Physics and Astronomy **Degree:** BS
Program/Major: Physics
Track/Emphasis: Mathematical Physics (Calculus Ready)
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/cn/physics-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 [ld core link](https://uca.edu/academicbulletins/ld-uca-core/) (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; a [ud core link](https://uca.edu/academicbulletins/ud-uca-core/) (https://uca.edu/academicbulletins/ud-uca-core/) takes the user to the *Undergraduate Bulletin's* list of Upper-Division (UD) UCA Core courses; an [acts link](https://uca.edu/academicbulletins/acts/) 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: 15)

| SUBJ | NUM | TITLE | SCH | ACTS |
|------|------|---|-----|------------------------------|
| PHYS | 1301 | Introduction to Physics | 3 | |
| MATH | 1496 | Calculus I | 4 | MATH2405 |
| WRTG | 1310 | Introduction to College Writing | 3 | ENGL1013 |
| | | LD UCA Core ² (First Year Seminar recommended) | 3 | ld core link |
| | | General Elective Course ³ | 2 | |

Spring – Semester 2 (credit hours: 15)

| SUBJ | NUM | TITLE | SCH | ACTS |
|--------------|--------------|---|-----|--|
| PHYS | 1441 | University Physics 1 | 4 | PHYS2034 |
| 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) | 3 | ENGL1023 ENGL1023 ld core link |
| | | LD UCA Core (First Year Seminar if not taken semester 1) | 3 | ld core link |

| SUBJ | NUM | TITLE | SCH | ACTS |
|------|-----|--------------------------------------|-----|------|
| | | General Elective Course ³ | 1 | |

Year 2**Fall – Semester 3 (credit hours: 15)**

| SUBJ | NUM | TITLE | SCH | ACTS |
|------|------|--|-----|------------------------------|
| PHYS | 1442 | University Physics 2 | 4 | PHYS2044 |
| MATH | 2471 | Calculus III | 4 | MATH2603 |
| MATH | 4371 | Introduction to Probability (UD UCA Core: R) | 3 | |
| | | LD UCA Core | 3 | ld core link |
| | | General Elective Course ³ | 1 | |

Spring – Semester 4 (credit hours: 16)

| SUBJ | NUM | TITLE | SCH | ACTS |
|------|------|--|-----|------------------------------|
| PHYS | 2443 | University Physics 3 | 4 | |
| MATH | 3331 | Ordinary Differential Equations (UD UCA Core: C) | 3 | |
| | | LD UCA Core | 3 | ld core link |
| | | LD UCA Core | 3 | ld core link |
| | | LD UCA Core | 3 | ld 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 | |
| MATH | | Major Elective ^{3,4} | 3 | |
| WRID | 3310 | Technical Writing (UD UCA Core: C) | 3 | |
| | | LD UCA Core | 3 | ld core link |
| | | General Elective Course ³ | 1 | |

Spring – Semester 6 (credit hours: 15)

| SUBJ | NUM | TITLE | SCH | ACTS |
|------|------|--------------------------------------|-----|------|
| PHYS | 3220 | Experiments in Physics 2 | 2 | |
| PHYS | 3341 | Mathematical Methods in Physics | 3 | |
| PHYS | 3343 | Thermal Physics | 3 | |
| MATH | | Major Elective ^{3,4} | 3 | |
| | | General Elective Course ³ | 1 | |
| | | General Elective Course ³ | 3 | |

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

| SUBJ | NUM | TITLE | SCH | ACTS |
|------|------|---------------------|-----|------|
| PHYS | 4111 | Senior Capstone 1 | 1 | |
| PHYS | 3353 | Quantum Mechanics 1 | 3 | |

| SUBJ | NUM | TITLE | SCH | ACTS |
|------|------|--|-----|------------------------------|
| PHYS | 3360 | Electromagnetism 1 | 3 | |
| MATH | | Major Elective ^{3,4} | 3 | |
| | | General Elective Course ³ (UD UCA Core: D or I as needed) | 3 | ud core link |
| | | General Elective Course ³ | 2 | |

Spring – Semester 8 (Credit hours: 14)

| SUBJ | NUM | TITLE | SCH | ACTS |
|------|------|--|-----|------------------------------|
| PHYS | 4211 | Senior Capstone 2 (UD UCA Core: Z) | 2 | |
| PHYS | 3354 | Quantum Mechanics 2 | 3 | |
| PHYS | 3361 | Electromagnetism 2 | 3 | |
| | | General Elective Course ³ (UD UCA Core: D or I as needed) | 3 | ud core link |
| | | General Elective Course ³ | 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 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 Major Elective and General Elective courses must be selected so that a minimum of 40 hours of credit is earned at the 3000 level or above.

⁴ Major elective courses must be approved by the Chair of the Department of Physics and Astronomy.