

MAJOR MAP FOR BACHELOR OF SCIENCE IN PHYSICS CONCENTRATION IN OPTICS(PHYSBS-OPTC) 2018-19 THROUGH 2023-24 CATALOG YEARS

Last Updated: July 21, 2023

PHYSBS-OPTC Degree Snapshot

University Perspectives (0-1 hr)

_____ **UNIV 1001**, University Perspectives or exemption

State Core English Composition (0-6 hrs)

_____ **ENGL 1013**, Composition 1 or exemption

_____ **ENGL 1023**, Composition 2 or exemption

State Core US History or Government (3 hrs)

_____ **US HIST/PLSC** _____

State Core Mathematics (0 hrs)

Met with Courses in major

State Core Natural Sciences w/ labs (0 hrs)

Met with courses in major.

State Core Social Sciences (9 hrs)

_____ **Social Science** _____

_____ **Social Science** _____

_____ **Social Science** _____

State Core Fine Arts (3 hrs)

_____ **Fine Art** _____

State Core Humanities (3 hrs)

_____ **Humanities** _____

Non-Physics Sciences (8 hrs, see list below)

_____ **Science** _____

_____ **Science** _____

Mathematics Courses (19-26 hrs)

_____ **MATH 1203**, College Algebra (or [math placement](#) in to higher math)

_____ **MATH 1284c**, Pre-Calculus OR **MATH 1213**, Plane Trigonometry (or [math placement](#) in to higher math)

_____ **MATH 2554c**, Calculus I

_____ **MATH 2564c**, Calculus II

_____ **MATH 2574c**, Calculus III

_____ **MATH 2584**, Elementary Differential Equations

_____ **MATH 3083**, Linear Algebra

Physics Core (22 hrs)

_____ **PHYS 2054**, University Physics I

_____ **PHYS 2074**, University Physics II

_____ **PHYS 2094**, University Physics III

_____ **PHYS 3453**, Electromagnetic Theory I

_____ **PHYS 3613**, Modern Physics

_____ **PHYS 4073**, Introduction to Quantum Mechanics

_____ **PHYS 4991**, Physics Seminar

Optics Concentration (16 hrs)

_____ **PHYS 3544**, Optics

_____ **PHYS 4734**, Intro to Laser Physics **OR** **PHYS 4773**,

Intro to Optical Properties of Materials

Choose 8-9 hours (depending on how many hours taken above) of additional ASTR or PHYS 3000+ courses (hours of individual courses may vary).

_____ **ASTR/PHYS 3000+** _____

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General Electives (23-37 hrs)

How you use these hours will depend on your educational and career goals. Early in your degree you might use this section to jot down ideas for how to plan. As you get closer to graduation, you might use this section to track which classes you've taken outside the above requirements.

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Graduation Plan

Use the following additional resources, in addition to this major map, to complete your graduation plan ([Catalog](#), and your [Degree Audit](#) in UAconnect). Many students have more than one major, minor, or pre-professional goal that has additional required classes. This tool allows you to combine all your educational goals in to one plan.

High School credit	List all Advanced Placement, International Baccalaureate, Dual or Concurrent credit			
Year	Fall	Spring	Summer	Total
Year 1				Total 1 st year credit hours (aim for 30):
Year 2				Total 2 nd year credit hours (aim for 60):
Year 3				Total 3 rd year credit hours (aim for 90):
Year 4				Total 4 th year credit hours (Must be at least 120):

Graduation Checklist (does your plan include the following):

- Do you have at least a 2.0 GPA (this will be something you track each semester)
- All state minimum core requirements
- All Major(s)/Minor(s) requirements
- [Writing requirement](#) complete
- Have At least 50% of each major/minor taken from UofA
- 24 hours of 3000+ classes exclusively from Fulbright College of Arts and Sciences classes
- 30 hours of 3000+ classes exclusively from the University of Arkansas. This can include courses taken for the 24-hour rule.
- 40 hours of upper-level classes. (3000+ or 2000+ with a pre-requisite. Can include transfer credit.) This can include courses taken for the 24-hour and 30-hour rules.
- 120 total eligible credit hours (see below for a list of ineligible classes)

COURSES THAT DO NOT COUNT TOWARDS THE 120 HOURS REQUIRED FOR GRADUATION

- ENGL 0002
- MATH 0001L, MATH 0002L, MATH 0003, and MATH 0131L

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- Duplicated/Repeated courses (i.e.: if the same course is taken more than once, the hours will only count once for graduation)

Department Information:

Faculty who have exception/substitution authority:

Transfer Coursework Restriction: At least 50% of a student's Arts and Sciences (ARSC) major or minor must be taken at the University of Arkansas.

GPA (Grade Point Average): Every student must have at least a 2.00 cumulative grade point average to be eligible to graduate from the University of Arkansas.

Please visit <https://catalog.uark.edu/undergraduatecatalog> for an extensive list of core, major, graduation, and pre-requisite requirements. To read more about individual classes, visit the [courses of instruction](#) page for course descriptions.

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Degree Requirement Breakdown by Category

The following information is designed to help you navigate your experience in your degree and answer common questions that may come up for each requirement.

Category	Degree Requirements	Curriculum Notes
<u>UNIVERSITY PERSPECTIVES</u> 0-1 hr	<ul style="list-style-type: none"> • UNIV 1001, University Perspectives 	Or equivalent from another University of Arkansas college. (AFLS 1023H, ARSC 1201, GNEG 1111, HIST 1003(H), HIST 1003(H), PLSC 1003, BUSI/WCOB 1111) Note: students who transfer to the University of Arkansas with at least 24 credit hours will have this requirement waived.
<u>STATE CORE COMPOSITION</u> 0-6 hrs	<ul style="list-style-type: none"> • ENGL 1013, Composition 1 or SAT/ACT exemption • ENGL 1023, Composition 2 or SAT/ACT exemption 	See Catalog for information about placement and/or exemption.
<u>STATE CORE US HISTORY or GOVERNMENT</u> 3 hrs	Choose 1: * <ul style="list-style-type: none"> • HIST 2003, History of the American People to 1877 • HIST 2013, History of the American People 1877 to Present • PLSC 2003, American National Government 	*Some courses may appear as options in multiple areas of the State Core. You can only count each course 1 time in the State Core and will need unique courses in each of the content areas below.
<u>STATE CORE MATHEMATICS</u> 0 hrs	Met with courses in major	Based on ACT/SAT or other math placement scores, students may need to enroll in additional remediation related courses. See catalog or math placement website for additional information.
<u>STATE CORE NATURAL SCIENCES CORE</u> 0 hrs	Met with courses in major	
<u>STATE CORE SOCIAL SCIENCES</u> 9 hrs	Choose 3: * <ul style="list-style-type: none"> • AGEC 1103, Principles of Agriculture Microeconomics • AGEC 2103, Principles of Agriculture Macroeconomics • ANTH 1023, Intro to Cultural Anthropology • COMM 1023, Communication in a Diverse World • ECON 2013, Principles of Macroeconomics • ECON 2023, Principles of Microeconomics • ECON 2143, Basic Economics: Theory and Practice • EDST 2003, Introduction to Educational Studies • GEOS 1123, Human Geography • GEOS 2003, World Regional Geography • HDFS 1403, Life Span Development • HDFS 2413, Family Relations • HDFS 2603, Rural Families & Communities • HIST 1113, Institutions and Ideas of World Civilizations I • HIST 1123, Institutions and Ideas of World Civilizations II • HIST 2003, History of the American People to 1877 • HIST 2013, History of the American People 1877 to Present • HIST 2093, Animals in World History • HUMN 1114H, Honors Roots of Culture to 500 C.E. (Honors only) • HUMN 2114H, Honors Birth of Modern Culture, 1600-1900 (honors only) • INST/PLSC 2813, Intro to International Relations & Global Studies 	Students must take classes from at least two departments in the Social Sciences category. *Some courses may appear as options in multiple areas of the State Core. You can only count each course 1 time in the State Core and will need unique courses in each of the content areas below.

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	<ul style="list-style-type: none"> • PLSC 2003, American National Government • PLSC 2013, Intro to Comparative Politics • PLSC 2203, State and Local Government • PSYC 2003, General Psychology • RESM 2853, Leisure and Society • SOCI 2013, General Sociology • SOCI 2033, Social Problems • STEM 2003, The Art of STEM Communication 	
<p>STATE CORE FINE ARTS</p> <p>3 hrs</p>	<p>Choose 1:</p> <ul style="list-style-type: none"> • ARCH 1003, Architecture Lecture • ARHS 1003, Art Lecture • COMM 1003, Film Lecture • DANC 1003, Movement and Dance • ENGL 2023, Creative Writing 1 • HUMN 2114H, Honors Birth of Modern Culture 1600-1900 (honors only) • LARC 1003, The American Landscape • MLIT 1003, Experiencing Music • MLIT 1013, Music and Society (music majors only) • MLIT 1333, Popular Music • THTR 1003, Theatre Appreciation • THTR 1013, Musical Theatre Appreciation • THTR 1683, Acting I • THTR 1883, Acting 1 for Theatre majors 	<p>Classes taken in this category may not overlap in any other core category</p>
<p>STATE CORE HUMANITIES</p> <p>3 hrs</p>	<p>Choose 1: *</p> <ul style="list-style-type: none"> • AAST 2023, The African American Experience • ANTH 1033, Introduction to Archeology • ARCH 1013, Diversity and Design • CLST 1003, Introduction to Classical Studies: Greece • CLST 1013, Introduction to Classical Studies: Rome • COMM 1233, Media, Community and Citizenship • DANC 1003, Dance Appreciation • DASC 2133, Data Privacy & Ethics • ENGL 1213, Introduction to Literature • ENGL 2023, Creative Writing I • GNST 2003, Introduction to Gender Studies • HIST 1113, Institutions and Ideas of World Civilizations I • HIST 1123, Institutions and Ideas of World Civilizations II • HIST 2003, History of the American People to 1877 • HIST 2013, History of the American People 1877 to Present • HUMN 1124H*, Honors Equilibrium of Cultures 500-1600 (Honors only) • HUMN 2213, Introduction to World Religions • LALS 2013, Introduction to Latin American and Latino Studies • MRST 2013, Introduction to Medieval and Renaissance Studies • MUSY 2003, Music in World Cultures • PHIL 2003, Introduction to Philosophy • PHIL 2103, Introduction to Ethics • PHIL 2203, Logic • PHIL 2303, Human Nature and the Meaning of Life • PHIL 3103, Ethics and the Professions 	<p>*Some courses may appear as options in multiple areas of the State Core. You can only count each course 1 time in the State Core and will need unique courses in each of the content areas below.</p>

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	<ul style="list-style-type: none"> • THTR 1003, Theatre Appreciation • THTR 1013, Musical Theatre Appreciation • WLIT 1113, World Literature: Beginnings to 1650 CE • WLIT 1123, World Literature: 1650 CE to Present • Any Intermediate level foreign language numbered at the 2000 level 	
<p><u>NON-PHYSICS SCIENCES</u></p> <p>8 hrs</p>	<p>Choose 2 sciences from below:</p> <ul style="list-style-type: none"> • CHEM 1103/1101L, University Chemistry I* • CHEM 1123/1121L, University Chemistry II • CSCE 2004, Programming Foundations I • CSCE 2014, Programming Foundations II • BIOL 1543/1541L, Principles of Biology • BIOL 1584, Biology for Majors • GEOS 1113/1111L, Physical Geology • GEOS 1133/1131L, Earth Science 	<p>*Students may count GNEG 1111 in lieu of CHEM 1101L. Students will need to ask their academic advisor to adjust their degree audit.</p> <p>**Student may also count MEEG 3202 and 3212 for 4 hours of non-Physics Sciences. Students will need to ask their academic advisor to adjust their degree audit.</p>
<p><u>MATHEMATICS COURSES</u></p> <p>19-26 hrs</p>	<ul style="list-style-type: none"> • MATH 1203, College Algebra (or math placement in to higher math) • MATH 1284c, Pre-Calculus OR MATH 1213, Plane Trigonometry (or math placement in to higher math) • MATH 2554c, Calculus I (pre-req: MATH 1284c, 1213, or math placement)* • MATH 2564c, Calculus II (pre-req: MATH 2554c) • MATH 2574c, Calculus III (pre-req MATH 2564c) • MATH 2584, Elementary Differential Equations (pre-req: MATH 2564c) • MATH 3083, Linear Algebra (Pre-req: MATH 2554c)** 	<p>Students must earn a C or higher to use a class as a pre-requisite.</p> <p>See catalog for additional pre-requisite information for individual classes.</p> <p>*MATH 2445, Calculus I with Review, can also count here.</p> <p>**Students may not receive credit for both MATH 3093 and MATH 3083. MEEG 2703, can be substituted for MATH 3083. Students will need to ask their academic advisor to adjust their degree audit.</p>
<p><u>PHYSICS CORE</u></p> <p>22 hrs</p>	<ul style="list-style-type: none"> • PHYS 2054, University Physics I (pre-req: MATH 2554c)* • PHYS 2074, University Physics II (pre-req: PHYS 2054 and MATH 2564)* • PHYS 2094, University Physics III (Fall only. pre-req: PHYS 2074. Co or pre-req: MATH 2574)** • PHYS 3453, Electromagnetic Theory I (Spring only. pre-req: PHYS 2074 and MATH 2574. Co or pre-req: MATH 2584) • PHYS 3613, Modern Physics (pre-req: PHYS 2074) • PHYS 4073, Introduction to Quantum Mechanics (Fall only. pre-req: PHYS 3613, MATH 2574, and MATH 2584) • PHYS 4991, Physics Seminar*** 	<p>While the catalog states that MATH 2554 and 2564 are pre-requisites to Physics 1 & 2, Physics majors may request to take them as co-requisites by emailing physics@uark.edu.</p> <p>**Students may take MEEG 2403 and MEEG 3503 in lieu of PHYS 2094. Students will need to ask their academic advisor to adjust their degree audit once they are done with both.</p> <p>***Majors must propose participation in a research experience project no later than the end of their junior year of study. A written report of the results must be submitted during Senior Seminar (PHYS 4991). PHYS 4991 meets the Fulbright Writing Requirement.</p>
<p><u>OPTICS CONCENTRATION</u></p> <p>16 hrs</p>	<ul style="list-style-type: none"> • PHYS 3544, Optics (Fall only. pre-req MATH 3654 and PHYS 2074) • PHYS 4734, Intro to Laser Physics OR PHYS 4773, Intro to Optical Properties of Materials (spring only. Pre-req: PHYS 3544 for both options) • Choose 8-9 hours (depending on how many hours taken above) of additional ASTR or PHYS 3000+ courses (hours of individual courses may vary). 	<p>Honors students can use some electives for specific course requirements. See below for more details.</p>

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<p>GENERAL ELECTIVES</p> <p>23-37 hrs</p>	<p>Hours will vary depending on math placement and whether a student is exempt from ENGL 1013 and 1023.</p>	<p>Some general electives may need to be upper level to meet college and university residency requirements. See Graduation Checklist on page 2 for more information.</p>
<p>WRITING REQUIREMENT</p>	<p>The college writing requirement may be satisfied in one of two ways:</p> <ul style="list-style-type: none"> • Completion of PHYS 4991 • Successful honors thesis defense 	
<p>HONORS</p>	<p>Minimum Requirements for Honors:</p> <ul style="list-style-type: none"> • Maintain cumulative grade point average of 3.5 in all coursework (and a 3.124 PHYS GPA) • Complete a minimum of 12 hours of honors courses from the UofA (including 6 hrs of PHYS 399VH and 3 hrs of PHYS 3923H). • Complete and defend Honors Thesis <p>See Catalog for full description of requirements.</p>	<p>Honors Thesis Timeline: Honors students should consistently check the honors thesis timeline to stay on track to complete your honors thesis.</p> <p>College Honors: Students who also are following the College Honors Core for Bachelor of Science programs need to also complete those additional requirements:</p> <ul style="list-style-type: none"> • 2023-24 catalog requirements • 2022-23 and older catalog requirements