

# Physics B.S. with Computational Concentration

## Physics B.S. with Computational Concentration

### Eight-Semester Degree Program

Students wishing to follow the eight-semester degree plan should see the Eight-Semester Degree Policy (<http://catalog.uark.edu/undergraduatecatalog/academicregulations/eightsemesterdegreecompletionpolicy/>) in the Academic Regulations chapter for university requirements of the program as well as Fulbright College requirements.

University/state minimum core requirements may vary by individual, based on placement and previous credit granted. Once all core requirements are met, students may substitute with general electives. Students should consult with their academic advisers.

First Year	Units	
	Fall	Spring
ENGL 10103 Composition I (ACTS Equivalency = ENGL 1013) (Satisfies General Education Outcome 1.1)	3	
MATH 24004 Calculus I (ACTS Equivalency = MATH 2405) (Satisfies General Education Outcome 2.1) <sup>1</sup>	4	
PHYS 20304 University Physics I (ACTS Equivalency = PHYS 2034) (Satisfies General Education Outcome 3.4)	4	
Fine Arts State Minimum Core (Satisfies General Education Outcome 3.1) <sup>2</sup>	3	
General Electives	1	
ENGL 10203 Composition II (ACTS Equivalency = ENGL 1023) (Satisfies General Education Outcome 1.1)		3
MATH 25004 Calculus II		4
PHYS 20404 University Physics II (ACTS Equivalency = PHYS 2044 Lecture) (Satisfies General Education Outcome 3.4)		4
Humanities State Minimum Core Requirement (Select a course which satisfies both General Education Outcomes 3.2 and 5.1) <sup>3</sup>		3
General Electives		1
Year Total:	15	15

Second Year	Units	
	Fall	Spring
MATH 26004 Calculus III	4	
PHYS 20504 University Physics III	4	
Select one of the following four-hour science lecture/lab combinations: <sup>4</sup>	4	

CHEM 14103 University Chemistry I (ACTS Equivalency = CHEM 1414 Lecture) & CHEM 14101 University Chemistry I Laboratory (ACTS Equivalency = CHEM 1414 Lab)

CHEM 14203 University Chemistry II (ACTS Equivalency = CHEM 1424 Lecture) & CHEM 14201 University Chemistry II Laboratory (ACTS Equivalency = CHEM 1424 Lab)

CSC 20004 Programming Foundations I

CSC 20104 Programming Foundations II

BIOL 10103 Principles of Biology (ACTS Equivalency = BIOL 1014 Lecture) & BIOL 10101 Principles of Biology Laboratory (ACTS Equivalency = BIOL 1014 Lab) or BIOL 10104 Biology for Majors (ACTS Equivalency = BIOL 1014 Lecture)

GEOL 11103 Physical Geology (ACTS Equivalency = GEOL 1114 Lecture) & GEOL 11101 Physical Geology Laboratory (ACTS Equivalency = GEOL 1114 Lab)

GEOL 11203 Earth Science (ACTS Equivalency = GEOL 1124 Lecture) & GEOL 11201 Earth Science Laboratory (ACTS Equivalency = GEOL 1124 Lab) or an approved four credit hours of other laboratory-based courses from these departments.

U.S. History or Government - State Minimum Core (Satisfies General Education Outcome 4.2) 3

MATH 25804 Elementary Differential Equations 4

PHYS 36103 Modern Physics 3

Select one of the following four-hour science lecture/lab combinations:<sup>4</sup> 4

CHEM 14103 University Chemistry I (ACTS Equivalency = CHEM 1414 Lecture) & CHEM 14101 University Chemistry I Laboratory (ACTS Equivalency = CHEM 1414 Lab)

CHEM 14203 University Chemistry II (ACTS Equivalency = CHEM 1424 Lecture) & CHEM 14201 University Chemistry II Laboratory (ACTS Equivalency = CHEM 1424 Lab)

CSC 20004 Programming Foundations I

CSC 20104 Programming Foundations II

BIOL 10103 Principles of Biology (ACTS Equivalency = BIOL 1014 Lecture) & BIOL 10101 Principles of Biology Laboratory (ACTS Equivalency = BIOL 1014 Lab) or BIOL 10104 Biology for Majors (ACTS Equivalency = BIOL 1014 Lecture)

GEOL 11103 Physical Geology (ACTS Equivalency = GEOL 1114 Lecture) & GEOL 11101 Physical Geology Laboratory (ACTS Equivalency = GEOL 1114 Lab)

GEOL 11203 Earth Science (ACTS Equivalency = GEOL 1124 Lecture) & GEOL 11201 Earth Science Laboratory (ACTS Equivalency = GEOL 1124 Lab) or an approved four credit hours of other laboratory-based courses from these departments.

Social Sciences State Minimum Core (Select a course which satisfies both General Education Outcomes 3.3 and 4.1) <sup>5</sup>		3
General Electives		1
Year Total:	15	15

Third Year	Units	
	Fall	Spring
MATH 30803 Linear Algebra	3	
PHYS 31103 Analytical Mechanics	3	
A junior-level laboratory course chosen from PHYS 3610V, PHYS 35404, or PHYS 32103	1-4	
Social Sciences State Minimum Core (Satisfies General Education Outcome 3.3) <sup>6</sup>	3	
General Electives	2-5	
PHYS 34503 Electromagnetic Theory I		3
Any PHYS, ASTR, CSCE, or MATH course numbered 3000 or higher		6
Social Sciences State Minimum Core (Satisfies General Education Outcome 3.3) <sup>6</sup>		3
General Electives		3
Year Total:	15	15

Fourth Year	Units	
	Fall	Spring
PHYS 40703 Introduction to Quantum Mechanics	3	
Any PHYS, ASTR, CSCE, or MATH course numbered 3000 or higher	3	
University Residency Requirement Electives	1	
General Electives	8	
PHYS 49901 Physics Senior Seminar (Satisfies General Education Outcomes 1.2 and 6.1)		1
Any PHYS, ASTR, CSCE, or MATH course numbered 3000 or higher (if needed). Otherwise, take General Electives.		3
General Electives		11
Year Total:	15	15

**Total Units in Sequence: 120**

<sup>1</sup> Students have demonstrated successful completion of the learning indicators identified for learning outcome 2.1, by meeting the prerequisites for MATH 24004.

<sup>2</sup> The Fine Arts Elective courses which satisfy General Education Outcome 3.1 include: ARCH 10003, ARHS 10003, COMM 10003, DANC 10003, LARC 10003, MUSC 10003, MUSC 100H3, MUSC 10103, MUSC 101H3, MUSC 13303, THTR 10003, THTR 10103, or THTR 101H3.

<sup>3</sup> The Humanities Elective courses which satisfy General Education Outcomes 3.2 and 5.1 include: CLST 10003, CLST 100H3, CLST 10103, HUMN 112H4, PHIL 20003, PHIL 200H3, PHIL 21003.

<sup>4</sup> CSCE 20004 and CSCE 20104 are highly recommended for students who plan to take additional computer science (CSCE) courses.

<sup>5</sup> The Social Sciences Elective courses which satisfy General Education Outcomes 3.3 and 4.1 include: ANTH 10203, COMM 10203, HDFS 14003, HDFS 24103, HIST 11193, HIST 111H3, HIST 11293, HIST 112H3, HIST 20903, HUMN 111H4, HUMN 211H4, INST 28103, INST 281H3, PLSC 20103, PLSC 28103, PLSC 281H3, RESM 28503, SOCI 10103, SOCI 101H3, or SOCI 20103.

<sup>6</sup> The Social Sciences Elective courses which satisfy General Education Outcome 3.3 include: AGECE 11003, AGECE 21003, ANTH 10203, COMM 10203, ECON 21003, ECON 22003, ECON 21403, EDST 20003, HDFS 14003, HDFS 24103, HDFS 26003, HIST 11193, HIST 111H3, HIST 11293, HIST 112H3, HIST 20003, HIST 20103, HIST 20903, HUMN 111H4, HUMN 211H4, INST 28103, INST 281H3, PLSC 20003, PLSC 20103, PLSC 21003, PLSC 28103, PLSC 281H3, PSYC 20003, RESM 28503, SOCI 10103, SOCI 101H3, or SOCI 20103.