

B.S. IN PHYSICS

2009-10

College of Humanities and Sciences General Education Requirements
Foundational Courses

1. Writing : Complete each course.	Credits	Grade
UNIV 111 Focused Inquiry I		
UNIV 112 Focused Inquiry II (C grade or better required)		
ENGL 200 Writing & Rhetoric II (C grade or better required; must complete 24 credits before enrolling)		

2. Mathematics & Statistics: Choose one course.	Credits	Grade
Completed within the major—see major requirements for required courses.		
Course Taken		

Supporting Courses

3. Human, Social, and Political Behavior: Choose one course.	Credits	Grade
ANTH/INTL 103 Introduction to Anthropology ECON 101/INTL 102 Introduction to Political Economy HUMS 300 Great Questions of the Social Sciences POLI 103 U.S. Government PSYC 101 Introduction to Psychology (4 credits) SOCY 101 General Sociology		
Course Taken		

4. Science and Technology: Choose one course.	Credits	Grade
BIOL 101 Biological Concepts (3 or 4 credits) BIOL/ENVS 103 Environmental Science (4 credits) CHEM 110 Chemistry and Society FRSC 202 Crime and Science INSC 201 Energy! (prerequisite: MATH 131, STAT 208 or higher level MATH or STAT) PHYS 103 Elementary Astronomy		
Course Taken		

5. Diverse and Global Communities: Choose one course.	Credits	Grade
INTL 101 Human Societies and Globalization MASC/INTL 151 Global Communication POLI/INTL 105 International Relations RELS 108 Human Spirituality WMNS 201 Introduction to Women's Studies		
Course Taken	3	

6. Literature and Civilization: Choose one course.	Credits	Grade
ENGL 215 Readings in Literature HIST 201 The Art of Historical Detection HUMS 250 Reading Film PHIL 201 Critical Thinking About Moral Problems WRLD 203 Cultural Texts and Contexts WRLD 230 Introduction to World Cinema		
Course Taken	3	

7. General Education Electives: Choose any 2 additional courses from boxes 3, 4, 5, or 6 (must be from two different boxes).	Credits	Grade
Course Taken		
Course Taken		

Experiential Courses

8. General Education Modules: Complete each.	Credits	Grade
Experiencing the Fine Arts: successfully complete one course from the School of the Arts (1-3 credits)		
HUMS 202 Choices in a Consumer Society	1	

9. Foreign Language: Must demonstrate competency through the 102 level by previous high school background or placement test.	Credits	Grade
101 level		
102 level		

10. Senior Capstone: taken in major as a senior (after at least 85 credits)	Credits	Grade
PHYS 490 Seminar in Conceptual Physics (fulfilled in major)		

NAME _____

 Has VCCS Associate Degree _____

PHYSICS Major Requirements

The Bachelor of Science curriculum in physics requires a minimum of 120 credits, including **54 credits** in physics or physics-related courses and mathematics, as detailed in the lists given below.

CHEM 101-102, CHEZ 101L-102L General Chemistry and Laboratories are highly recommended for all physics majors.

Mathematics: complete each course according to placement test	Credits	Grade
MATH 151 Pre-calculus (prerequisite: MATH 141 or satisfactory score on math placement test)		
MATH 200 Calculus with Analytic Geometry I (prerequisite: MATH 151 or satisfactory score on math placement test)		
MATH 201 Calculus with Analytic Geometry II (prerequisite: MATH 200)		
MATH 301 Differential Equations (prerequisite: MATH 201)		
MATH 307 Multivariate Calculus (prerequisite: MATH 201)		

Physics Core: Required for all Physics majors.	Credits	Grade
PHYS 207 University Physics I (prerequisite: MATH 200 or instructor approval)		
PHYS 208 University Physics II (prerequisite: PHYS 207; corequisite: MATH 201)		
PHYS 301 Classical Mechanics I (prerequisite: PHYS 208, MATH 301; corequisite: MATH 307)		
PHYS 320 Modern Physics (prerequisite: PHYS 208, MATH 301; corequisite: MATH 307)		
PHYZ 320L Modern Physics Lab (pre or corequisite: PHYS 320)		
PHYS 340 Statistical Mechanics & Thermodynamics (prerequisites: PHYS 301, MATH 307)		
PHYS 376 Electromagnetism (prerequisites: PHYS 301, MATH 307)		
PHYS 380 Quantum Physics I (prerequisites: PHYS 320, MATH 307)		
PHYS 450 Senior Physics Lab (prerequisites: PHYS 301, 320, PHYZ 320)		
PHYS 490 Seminar in Conceptual Physics (prerequisites: PHYS 376, 420)		

Elective Physics and physics-related courses (9 credits minimum). Note: Students who have their primary major in physics are required to fulfill at least three credits using upper-level physics courses listed below.		

Any upper-level physics course not listed as a required course: PHYS 302 Mechanics II, PHYS 397 Directed Study, PHYS 420 Quantum II, PHYS 440 Solid State, PHYS 491 Topics in Physics, PHYS 492 Independent Study

Any of the following math or statistics courses: MATH 310 Linear Algebra, MATH 437 Partial Differential Equations, MATH 511 Applied Linear Algebra, MATH 512 Complex Analysis, MATH 515-516 Numerical Analysis I-II, MATH 517-518 Methods of Applied Math, STAT 541 Applied Statistics

Any of the following chemistry courses: CHEM 409 Instrumental Analysis, CHEM 510 Atomic and Molecular Structure

Any of the following engineering courses: EGRB 303 Biotransport Processes, EGRB 427 Biomaterials, EGRC 301 Fluid Dynamics and Heat Transfer, EGRE 224 Introduction to Microelectronics, EGRE 303 Electronic Devices, EGRE 307 Integrated Circuits, EGRM 436 Engineering Materials, ENGR 301 Fluid Mechanics, ENGR 412 Advanced Engineering Mathematics

Additional degree requirements

- Cumulative 2.00 GPA
- 2.00 GPA in the major
- 45 credits in upper level courses or the equivalent
- 120 total earned hours
- At least 30 of the last 45 credits taken at VCU