VCU

V i r g i n i a   C o m m o n w e a l t h   U n i v e r s i t y

B.S. IN MATHEMATICAL SCIENCES – MATHEMATICS   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 or academic research writing course (C grade or better required; must complete 24 credits before enrolling)		

2. Mathematics & Statistics: Choose one course.		
MATH 141 Algebra with Applications or MATH 151 Precalculus or MATH 200 Calculus with Analytic Geometry I (beginning level determine by placement test)		
Course Taken		

Supporting Courses

3. Human, Social, and Political Behavior: Choose one course.		
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.		
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.		
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.		
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).		
Course Taken		
Course Taken		

Experiential Courses

8. General Education Modules: Complete each.		
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.		
101 level		
102 level		

10. Senior Capstone: taken in major as a senior (after at least 85 credits)		
MATH 490 Mathematical Expositions (fulfilled in major)		

❑   Has VCCS Associate Degree _____

MATHEMATICAL SCIENCES Major Requirements

The Bachelor of Science degree awarded by the Department of Mathematics and Applied Mathematics requires a minimum of 42 credits above the 100 level in courses labeled MATH, OPER, STAT, or CMSC. Students choose the concentration in mathematics, applied mathematic, biomathematics or secondary mathematics teacher preparation.   At least 24 of these credits must be at the 300-500 levels.

Note: A grade of C or better is required in courses/credits marked with an asterisk (*).

Applied Mathematics
MATH 301 Differential Equations*; MATH 532 Ordinary Differential Equations I; MATH 437 Partial Differential Equations I; and either MATH 501 Introduction to Abstract Algebra **or** MATH 525 Introduction to Combinatorial Mathematics. Also, complete nine additional upper-level credits in mathematics, statistics, operations research, or computer science courses (at least one of which must be at the 500 level), **or** three credits at the 500 level and complete a minor or a double major.

Mathematics
MATH 301 Differential Equations*; MATH 501 Intro to Abstract Algebra; MATH 508 Analysis II; MATH 509 General Topology; and MATH 525 Introduction to Combinatorial Mathematics. Also, complete six additional upper-level credits in mathematics, statistics, operations research, or computer science courses, **or** complete a minor or a double major.

Secondary Mathematics Teacher Preparation
MATH 327 Mathematical Modeling; MATH 504 Algebraic Structures and Functions; MATH 505 Modern Geometry; MATH 530 History of Mathematics; MATH 554 Using Technology in the Teaching of Mathematics. Also, complete six additional upper-level credits in mathematics, statistics, operations research, or computer science courses, **or** complete a minor or a double major which could be in education.

Biomathematics
MATH 301 Differential Equations*; MATH 380 Introduction to Mathematical Biology; MATH 580-581 Methods of Applied Mathematics for the Life Sciences I-II; MATH 582 Computational Modeling in Mathematical Biology; MATH 585 Biomathematics Seminar:___ (2 credits). Also, complete three additional upper-level credits in mathematics, statistics, operations research, or computer science courses, **or** complete a minor or a double major.

CONCENTRATION_____

Mathematics Core: Required for all Mathematical Science majors.	Credits	Grade
MATH 200 Calculus with Analytic Geometry I *		
STAT 212 Concepts of Statistics		
MATH 201 Calculus with Analytic Geometry II *		
MATH 255 Introduction to Computational Mathematics **or** CMSC 245 Introduction to Using Programming C++		
MATH 300 Introduction to Mathematical Reasoning*		
MATH 307 Multivariate Calculus*		
MATH 310 Linear Algebra*		
MATH 490 Mathematical Expositions		
MATH 507 Analysis I		

Concentration: Other required courses in mathematics		

Natural Sciences: Complete one of the following sequences of courses with lab: BIOL 151-152 OR PHYS 207-208 OR PHYS 201-202 OR CHEM 101-102 .		
Complete another course in the natural sciences that is not from the General Education Science and Technology list. This course must be in a science different from the sequence chosen in the "Natural Sciences" box above.		

Electives: Select additional courses to satisfy the 120 credits needed to graduate.	Credits	Grade

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*