MATHEMATICS B.S.

Program Learning Outcomes

1. A Vanguard University graduate in Mathematics will demonstrate competence in mathematical abstraction;
2. Effectively communicate mathematics both orally and in writing;
3. Use the basic concepts of computer programming and numerical methods in solving mathematical and related problems;
4. Be able to independently investigate a mathematical topic; and
5. Demonstrate facility with the theory and applications of calculus.

Requirements

Code	Title	Units
Core Curriculum Requirements (https://catalog.vanguard.edu/interdisciplinary-offerings/core-curriculum/) [1]		50
Mathematics Major Requirements		41
General Electives		29
Total Units		**120**

Mathematics Major Requirements

Code	Title	Units
Lower Division:		
CSCI-110C	Introduction to Computer Science	4
MATH-180C	Calculus 1	4
MATH-181C	Calculus II	4
MATH-265C	Intro to Statistical Methods	3
MATH-281	Multivariable Calculus	4
MATH-285	Introduction to Advanced Mathematics	3
Upper Division:		
MATH-300	Linear Algebra	3
MATH-310	Differential Equations	3
MATH-380	Elementary Analysis I	3
MATH-488	Senior Project	2
or MATH-485	Undergraduate Mathematics Research	
MATH-499C	Mathematics Capstone	2
MATH Electives:		
Select six units from the following:		6
MATH-330	Number Theory	
MATH-365	Probability and Statistics	
MATH-375	Discrete Mathematics	
MATH-390	Numerical Analysis [2]	
MATH-410	Abstract Algebra	
MATH-420	Higher Geometry	
Total Units		**41**

[1]

Number of units required from the Core Curriculum not included in the major requirements below.

[2]

Requires a programming language class: ENGR 307, CSCI 208, or CSCI 218

Four Year Plan

Disclaimer: *This* sample *Four Year Plan is provided as a guide for the recommended sequencing of courses. Vanguard University requires that students complete a minimum of 120 units of required course work as outlined on the Requirements tab in order to receive a Bachelor of Arts, Bachelor of Music, Bachelor of Science, or Bachelor of Science in Nursing degree. It is the student's responsibility to confirm with the department the course rotation before enrolling in courses. If applicable, please note the footnotes at the bottom of the page for additional information related to courses listed in a particular year and term. Questions, contact the Department of Physical Sciences and Applied Mathematics.*

Study Abroad Participation: *Students interested in participating in the university's Study Abroad programs are encouraged to reach out to the* Global Education and Outreach Office *(*studyabroad@vanguard.edu*) for more information and collaboration in their academic course planning. Students using Education and Training Benefits through the U.S. Department of Veteran Affairs are encouraged to also reach out to the* School Certifying Official *(*veteranscertifyingofficial@vanguard.edu*) for more information regarding how benefits can be applied.*

Course	Title	Units
Year 1 Term 1		
CORE-100C	Cornerstone	1
MATH-180C	Calculus 1	4
ENGL-120C	Persuasive Writing	3
NT-101C	New Testament Survey	3
CSCI-110C	Introduction to Computer Science	4
	Units	**15**
Year 1 Term 2		
MATH-181C	Calculus II	4
COMM-201C	Speech Composition and Presentation	3
THEO-101C	Foundations of Christian Life	3
HIST-PLHD	History Core Requirement	3
MATH-285	Introduction to Advanced Mathematics	3
	Units	**16**
Year 2 Term 1		
MATH-281	Multivariable Calculus	4
OT-201C	Old Testament Survey	3
MATH-300	Linear Algebra	3
ENGL-220C	Researched Writing	3
KINE-148C	Lifetime Fitness and Wellness Lecture	3
	Units	**16**
Year 2 Term 2		
MATH-265C	Intro to Statistical Methods	3
SOC-PLCR	Social Science Core Curriculum Reqm't	3
MATH-310	Differential Equations	3

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Code	Title	Units
MATH-390	Numerical Analysis	3
NSCI-PLCR	Science Lec/Lab Requirement	4
	Units	**16**
Year 3 Term 1		
THEO-300C	Developing a Christian World View	3
SOC-PLCR	Social Science Core Curriculum Reqm't	3
MATH-CELCT	Math UD Elective	3
ELCT-PLUD6	Upper Division Elective	6
	Units	**15**
Year 3 Term 2		
MATH-330	Number Theory	3
MATH-380	Elementary Analysis I	3
HIST-PLCR1	History Core Req (US Hist Or Democracy)	3
MATH-488	Senior Project	2
ELCT-PLUD3	Upper Division General Elective 3 Units	3
	Units	**14**
Year 4 Term 1		
HIST-PLCR2	History Core Requirement (World Civ)	3
CHIS-400C	Christian Heritage	3
MATH-CELCT	Math UD Elective	3
ELCT-PLHD6	Electives 6 Units	6
	Units	**15**
Year 4 Term 2		
MATH-499C	Mathematics Capstone	2
ENGL-230C	Literature and the Human Experience	3
FINA-PLCR	Fine Arts Core Curriculum Requirement	3
ELCT-PLHD6	Electives 6 Units	6
	Units	**14**
	Total Units	**121**