

Program Learning Outcomes for Mathematics

Graduating majors in the Traditional Track should be able to:

1. Outcome 1 (Knowledge): Demonstrate mastery of the core material found in single and multi-variable Calculus and Linear Algebra. EMBEDDED TESTS
2. Outcome 2 (Knowledge): Demonstrate mastery of the core concepts in Group Theory and Real Analysis. EMBEDDED TESTS
3. Outcome 3 (Comprehension): Correctly identify fundamental concepts within and across the major areas of mathematics, with particular emphasis on Linear Algebra, Group Theory, and Real Analysis. EMBEDDED TESTS
4. Outcome 4 (Reasoning): Use a variety of theorem-proving techniques to prove mathematical results. EMBEDDED TESTS
5. Outcome 5 (Communication): Demonstrate the abilities to read and articulate mathematics verbally and in writing. GE RUBRICS FOR ORAL AND WRITTEN COMMUNICATION

Graduating majors in the Teaching Track should be able to:

1. Outcome 1 (Knowledge): Demonstrate mastery of the core material found in single and multi-variable Calculus and Linear Algebra. EMBEDDED TESTS
2. Outcome 2 (Knowledge): Demonstrate mastery of the core concepts in Ring Theory, Real Analysis, Probability, and Statistics. EMBEDDED TESTS
3. Outcome 3 (Comprehension): Correctly identify fundamental in and across the major areas of mathematics, including Linear Algebra, Ring Theory, Real Analysis, Geometry, Probability, and Statistics. EMBEDDED TESTS
4. Outcome 4 (Reasoning): Use a variety of theorem-proving techniques to prove mathematical results. EMBEDDED TESTS
5. Outcome 5 (Communication): Demonstrate the abilities to read and articulate mathematics verbally and in writing. GE RUBRICS FOR ORAL AND WRITTEN COMMUNICATION
6. Outcome 6 (Application): Demonstrate a level of mathematical sophistication consistent with the ability to develop and deliver all pre-college mathematics.
7. Outcome 7 (Technology): Demonstrate an ability to appropriately use technology in the problem-solving process, including graphing calculators, Computer Algebra Systems, and Statistical Software. EMBEDDED TESTS

Curriculum Matrices for Mathematics (Traditional and Teaching Tracks)

I=Introduced, D=Developed & Practiced with Feedback, M=Demonstrated at the Mastery

Traditional Track: Matrix of Program Outcomes and Courses						
Courses for Major	Required Elective	SLO1	SLO2	SLO3	SLO4	SLO5
Math 241 Calculus I	R	I	I	I		I
Math 242 Calculus II	R	I	I	I		I
Math 243 Calculus III	R	D	I	I		I
Math 244 Calculus IV	R	D	I	I		I
Math 300 Ordinary Differential Equations	E	D				D
Math 301 Partial Differential Equations	E	D				D
Math 310 Discrete Mathematics	R				I,D	I,D
Math 311 Linear Algebra	R	I,D,M	I	I	I	I,D
Math 314 Topology	R		D	D	I,D	D
Math 317 Theory of Equations	E		D	D	D	D
Math 324 Ring Theory	R		D	D	I,D	D
Math 421 Probability Theory	E					D
Math 422 Mathematical Statistics	E					D
Math 424 Group Theory	R		M	M	M	M

Math 431 Real Analysis I	R	M	M	M	M	M
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Teaching Track: Matrix of Program Outcomes and Courses

Courses for Major	Required Elective	SLO1	SLO2	SLO3	SLO4	SLO5	SLO6	SLO7
Math 241 Calculus I	R	I	I	I		I	I	I
Math 242 Calculus II	R	I	I	I		I	I	D
Math 243 Calculus III	R	D	I	I		I		
Math 244 Calculus IV	R	D	I	I		I		
Math 300 Ordinary Differential Equations	E	D		D		D	D	
Math 301 Partial Differential Equations	E	D		D		D		D
Math 310 Discrete Mathematics	R				I,D	I,D	D	
Math 311 Linear Algebra	R	I,D,M	I	I	I	I,D	D	
Math 314 Topology	E		D	D	I,D	I,D		
Math 317 Theory of Equations	E		D	D	D	D	D	
Math 324 Ring Theory	R		D	D	I,D	I,D	M	
Math 421 Probability Theory	R	M	M	M		D	M	M
Math 422 Mathematical Statistics	R	M	M	M		D	M	M
Math 424 Group Theory	E		M	M	M	M		
Math 431 Real Analysis I	R	M	M	M	M	M	M	

Math 441 Geometry	R			M	M	M	M	M
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Math 496 Teaching and Tutoring Math	R	D	D	D		D	D	M
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Rubric for PLO 6 (Teaching Track) – Teaching Plan

SCORE	Teaching Plan
Far Exceeds Expectations 4	Student teaching plan includes well researched background into problem, solution techniques, and how it connects with other problems in Geometry and, more broadly, in Mathematics. It clearly states well selected best teaching techniques and strategies for each part of the material presented/practiced in class. Assessment is fine-tuned and planned at an appropriate time in the lesson to close the loop. Plan includes clear and appropriate remediation steps, if needed.
Competence 3	Student teaching plan includes basic insight into problem and solution techniques. Assessment follows the material and is planned at an appropriate time. Plan includes details for closing the loop and remediation, if needed.
Needs Work 2	Student teaching plan is largely complete but does not adequately develop the problem and or solution techniques. Assessment is inappropriate, not thorough enough, or planned at a poor time. Closing the loop and remediation plans are not well thought out or are not clearly described.
Unable to meet standards 1	Lesson plan shows lack of understanding of content and/or techniques, or lesson building in general. Plan is missing crucial elements.