Rule 24 Matrix
Revised: March 2007
Table of Alignment of Standards and Assessments

Endorsement: Mathematics | **Grade Levels: 7-12** | **Endorsement Type: Subject**
Total Hours Required by Rule 24: 30 | **Program Hours Required by Institution: 36** | **Name of Institution: Concordia University, Nebraska**

Endorsement Program Requirements: Nebraska teacher education institutions offering this endorsement program must have on file, within the institution, a plan which identifies the courses and the course completion requirements which the institution utilizes to grant credit toward completion of this endorsement.

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Standard/Description

006.39D Certification Endorsement Requirements: This endorsement shall require a minimum of 30 semester hours of mathematics.

Course #, Title, and Credits	Course Assessment(s)	Key Program Assessment(s)	Candidate Proficiencies: Content Knowledge	Pedagogical Knowledge	Skills	Dispositions	P-12 Student Learning
Math 184, Calculus I, 4	Tests		X		X		
Math 186, Calculus II, 4	Tests	Final Exam	X		X		
Math 252, Mathematical Structures, 3	Portfolio	Portfolio	X		X		
Math 284, Calculus III, 4	Tests		X		X		
Math 322, Foundations of Statistics, 3	Tests		X		X		
Math 332, Abstract Algebra, 3 or	Tests		X		X		
Math 333, Linear Algebra, 3	Tests		X		X		
Math 335, Number Theory, 3	Tests	Tests	X		X		
Math 348, Discrete Structures, 3	Tests		X		X		
Math 365, Foundations of Geometry, 3	Tests		X		X		
Math 382, Real Analysis, 3 or	Tests		X		X		
Math 384, Differential Equations, 3	Tests		X		X		
Math 475, Mathematical Modeling, 3	Tests, Projects	Projects	X		X		
Educ 374, Methods in Secondary Mathematics, 2	Lesson Plans			X			

Standard/Description

A. Demonstrate knowledge and understanding of and be able to teach the concepts, skills, and processes of mathematics as defined in the Nebraska Content Standards for eighth and twelfth grades.

Course #, Title, and Credits	Course Assessment(s)	Key Program Assessment(s)	Candidate Proficiencies: Content Knowledge	Pedagogical Knowledge	Skills	Dispositions	P-12 Student Learning
Math 184, Calculus I, 4	Tests		X		X		
Math 186, Calculus II, 4	Tests	Final Exam	X		X		
Math 252, Mathematical Structures, 3	Portfolio	Portfolio	X		X		
Math 284, Calculus III, 4	Tests		X		X		
Math 322, Foundations of Statistics, 3	Tests		X		X		
Math 332, Abstract Algebra, 3 or	Tests		X		X		
Math 333, Linear Algebra, 3	Tests		X		X		
Math 335, Number Theory, 3	Tests	Tests	X		X		
Math 348, Discrete Structures, 3	Tests		X		X		
Math 365, Foundations of Geometry, 3	Tests		X		X		
Math 382, Real Analysis, 3 or	Tests		X		X		
Math 384, Differential Equations, 3	Tests		X		X		
Math 475, Mathematical Modeling, 3	Tests, Projects	Projects	X		X		

Standard/Description

B. Demonstrate an understanding of and be able to apply the processes of mathematics, including being able to:
1. Use problem-solving approaches to investigate and understand mathematical content;
2. Formulate and solve problems from both mathematics and everyday situations;
3. Communicate mathematical ideas orally and in writing using everyday language, mathematical language, symbols, and graphs;
4. Make mathematical conjectures, evaluate arguments and validate mathematical thinking;
5. Examine relationships within mathematics;
6. Connect mathematics to other disciplines and real-world situations;
7. Use technology in exploration, computation, graphing, and problem solving; and
8. Use instructional strategies based on current research as well as national, state, and local standards relating to mathematics instruction.

Candidate Proficiencies

Course #, Title, and Credits	Course Assessment(s)	Key Program Assessment(s)	Content Knowledge	Pedagogical Knowledge	Skills	Dispositions	P-12 Student Learning
Math 184, Calculus I, 4	Tests		X		X		
Math 186, Calculus II, 4	Tests	Final Exam	X		X		
Math 252, Mathematical Structures, 3	Portfolio	Portfolio	X		X		
Math 284, Calculus III, 4	Tests		X		X		
Math 322, Foundations of Statistics, 3	Tests		X		X		
Math 332, Abstract Algebra, 3 or	Tests		X		X		
Math 333, Linear Algebra, 3	Tests	Tests	X		X		
Math 335, Number Theory, 3	Tests		X		X		
Math 348, Discrete Structures, 3	Tests		X		X		
Math 365, Foundations of Geometry, 3	Tests		X		X		
Math 382, Real Analysis, 3 or	Tests		X		X		
Math 384, Differential Equations, 3	Tests, Projects	Projects	X		X		
Math 475, Mathematical Modeling, 3							

Standard/Description

C. Demonstrate an understanding of and be able to apply the concepts and principles of mathematics, including being able to:
1. Apply concepts of number, number theory, and number systems;
2. Apply numerical computation and estimation techniques and extend them to algebraic expressions;
3. Use geometric concepts and relationships to describe and model mathematical ideas and real-world constructs;
4. Use both descriptive and inferential statistics to analyze data, make predictions, and make decisions;
5. Demonstrate an understanding of the concepts of theoretical and simulated probability and apply them to real-world situations;
6. Use algebra to describe patterns, relations, and functions and to model and solve problems;
7. Recognize the roles of axiomatic systems and proofs in different branches of mathematics, such as algebra and geometry;
8. Demonstrate an understanding of the concepts of limit, continuity, differentiation, and integration, and the techniques and applications of calculus;
9. Demonstrate an understanding of the concepts and applications of discrete mathematics such as graph theory, matrices, recurrence relations, linear programming, difference equations, and combinatorics;
10. Use mathematical modeling to solve problems from other fields such as natural sciences, social sciences, business, and engineering;
11. Demonstrate an understanding of and be able to apply the major concepts of geometry;
12. Demonstrate an understanding of and be able to apply the major concepts of linear algebra;
13. Demonstrate an understanding of and be able to apply the major concepts of abstract algebra; and
14. Demonstrate an understanding of the historical development in mathematics that includes the contributions of under-represented groups and diverse cultures.

Candidate Proficiencies

Course #, Title, and Credits	Course Assessment(s)	Key Program Assessment(s)	Content Knowledge	Pedagogical Knowledge	Skills	Dispositions	P-12 Student Learning

Math 184, Calculus I, 4	Tests		X		X		
Math 186, Calculus II, 4	Tests	Final Exam	X		X		
Math 252, Mathematical Structures, 3	Portfolio	Portfolio	X		X		
Math 284, Calculus III, 4	Tests		X		X		
Math 322, Foundations of Statistics, 3	Tests		X		X		
Math 332, Abstract Algebra, 3 or	Tests		X		X		
Math 333, Linear Algebra, 3	Tests		X		X		
Math 335, Number Theory, 3	Tests	Tests	X		X		
Math 348, Discrete Structures, 3	Tests		X		X		
Math 365, Foundations of Geometry, 3	Tests		X		X		
Math 382, Real Analysis, 3 or	Tests		X		X		
Math 384, Differential Equations, 3	Tests		X		X		
Math 475, Mathematical Modeling, 3	Tests, Projects	Projects	X		X		

Standard/Description							
D. The program for prospective teachers may include the following coursework: Pre-calculus, Calculus, Logic/Foundations, Linear Algebra, College Geometry, Probability and Statistics, Discrete/Finite Mathematics, History of Mathematics, Abstract Algebra, and Computer Programming and Applications.			**Candidate Proficiencies**				
Course #, Title, and Credits	**Course Assessment(s)**	**Key Program Assessment(s)**	**Content Knowledge**	**Pedagogical Knowledge**	**Skills**	**Dispositions**	**P-12 Student Learning**
Math 184, Calculus I, 4	Tests		X		X		
Math 186, Calculus II, 4	Tests	Final Exam	X		X		
Math 252, Mathematical Structures, 3	Portfolio	Portfolio	X		X		
Math 284, Calculus III, 4	Tests		X		X		
Math 322, Foundations of Statistics, 3	Tests		X		X		
Math 332, Abstract Algebra, 3 or	Tests		X		X		
Math 333, Linear Algebra, 3	Tests		X		X		
Math 335, Number Theory, 3	Tests	Tests	X		X		
Math 348, Discrete Structures, 3	Tests		X		X		
Math 365, Foundations of Geometry, 3	Tests		X		X		
Math 382, Real Analysis, 3 or	Tests		X		X		
Math 384, Differential Equations, 3	Tests		X		X		
Math 475, Mathematical Modeling, 3	Tests, Projects	Projects	X		X		