



NEW JERSEY CENTER
FOR TEACHING & LEARNING

**Progressive Mathematics Initiative® (PMI®)
MATH6463: MS Mathematics Praxis Preparation**

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Course Credit: 2.0 NJCTL credits

Dates & Times:

This is a 2-credit, self-paced course, covering 6 modules of content. The exact number of hours that you can expect to spend on each module will vary based upon the module coursework, as well as your study style and preferences. You should plan to spend approximately 15 hours per credit working online, and up to 30 hours per credit working offline.

Graduate Student Handbook: www.njctl.org/graduate-handbook/

COURSE DESCRIPTION:

This capstone course is for teachers to learn further topics from the student course PMI Algebra II and how to teach those topics to students, while providing teachers a greater depth of understanding to support their teaching of PMI Middle School Mathematics. This capstone course also serves as a review for the Praxis Middle School Mathematics Test.

STUDENT LEARNING OUTCOMES:

Upon completion of the course, the student will be able to:

1. Understand and work with mathematical concepts, to reason mathematically, to make conjectures, see patterns, and to justify statements using informal, logical arguments.
2. Demonstrate the ability to solve problems by integrating knowledge of different areas of mathematics.
3. Implement the use of various representations of concepts.
4. Solve problems that have several solution paths.
5. Effectively demonstrate the use of technology in mathematics education.
6. Develop mathematical models and use them to solve real-world problems.

TEXTS, READINGS, INSTRUCTIONAL RESOURCES

Required Texts:

- MS Mathematics Praxis Preparation uses free, online textbooks that are available within the course modules as PDFs. Readings are derived from:
 - <https://njctl.org/courses/math/pre-algebra/>
 - <https://njctl.org/courses/math/algebra-i/>
 - <https://njctl.org/courses/math/geometry/>
 - <https://njctl.org/courses/math/algebra-ii/>

Recommended Readings:

Related articles within short answer assignments.

COURSE REQUIREMENTS:

In order to receive a Passing grade, the participant must complete the following course requirements:

1. Activities: A number of different learning activities will ensure participant engagement and learning in the course. These include:
 - Engage in video module lessons which demonstrate minimized direct instruction followed by frequent formative assessment
 - Completion of formative assessments aligned to learning objectives which include detailed analysis when answered incorrectly.
 - Interaction with module discussion boards that allow conversation with peers and course instructors about the module's content, delivering that content to students. Discussion boards also serve as a place to ask and answer questions related to the module's content.
2. Mastery Exercises: For each module, these multiple-choice question quizzes assess the content knowledge gained in a module. Participants have the opportunity to retake; random questions are pulled from a larger question bank on each attempt ensuring varied questions.
3. Virtual Labs: Virtual labs are interactive lab simulations that are aligned to further prepare participants for the Praxis exam covering topics about the On-Screen Calculator.
4. Module Exam: One is completed at the end of each module. It is a culminating exam consisting of praxis-like multiple-choice questions aligned to the exam objectives.
5. Reflection Paper: At the end of the course, participants are required to reflect on the knowledge taught in the course, make connections, and compare/contrast their current pedagogy with new strategies gained in this assignment.
6. Final Exam: At the end of the course, a comprehensive exam consisting of Multiple Choice questions assesses the content knowledge learned throughout the course in preparation for the praxis exam.

GRADE DISTRIBUTION AND SCALE:

Grade Distribution:

Module Exams	70%
Final Exam	20%
Labs	2%
Mastery Exercises	6%
Reflection Paper	2%

Grade Scale:

A	93 – 100
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A-	90 – 92
B+	86 – 89
B	83 – 86
B-	80 – 82
C+	77 – 79
C	73 – 76
C-	70 – 72
D	60.0 – 69.9
F	59.9 or below

ACADEMIC STANDING:

NJCTL has established standards for academic good standing within a student’s academic program. Students enrolled in any NJCTL online course must receive an 80 or higher to successfully complete a course and receive credit for that course. An 80 is equivalent to a GPA of 2.7 or B-. Additionally, students in an endorsement program must receive a cumulative GPA of 3.0 for all courses combined in order to successfully complete the program.

ACADEMIC INTEGRITY:

Students must assume responsibility for maintaining honesty in all work submitted for credit and in any other work designated by the instructor of the course. Academic dishonesty includes cheating, fabrication, facilitating academic dishonesty, plagiarism, reusing /repurposing your own work, unauthorized possession of academic materials, and unauthorized collaboration.

CITING SOURCES WITH APA STYLE:

All students are expected to follow proper writing and APA requirements when citing in APA (based on the APA Style Manual, 6th edition) for all assignments.

DISABILITY SERVICES STATEMENT:

We are committed to providing reasonable accommodations for all persons with disabilities. Any student with a documented disability requesting academic accommodations should contact the Dean of Students, Melissa Axelsson, for additional information to coordinate reasonable accommodations for students with documented disabilities (melissa@njctl.org).

NETIQUETTE:

Respect the diversity of opinions among the instructor and classmates and engage with them in a courteous, respectful, and professional manner. All posts and classroom communication must be conducted in accordance with the student code of conduct. Think before you push the Send button. Did you say just what you meant? How will the person on the other end read the words?

Maintain an environment free of harassment, stalking, threats, abuse, insults or humiliation toward the instructor and classmates. This includes, but is not limited to, demeaning written or oral comments of an ethnic, religious, age, disability, sexist (or sexual orientation), or racist nature; and the unwanted sexual advances or intimidations by email, or on discussion boards and other postings within or connected to the online classroom.

If you have concerns about something that has been said, please let your instructor know.

CLASS SCHEDULE:

Module	Module Learning Outcomes	Assignments
1 – Numbers and Operations	<ul style="list-style-type: none"> • Understand operations and properties of the real number system. • Understand the relationship among fractions, decimals, and percents. • Know how to use ratio reasoning to solve problems. • Know how to use proportional relationships to solve real-world problems. • Know how to use basic concepts of number theory (e.g. divisibility, prime factorization, multiples) to solve problems. • Knows a variety of strategies to determine the reasonableness of results. 	<ul style="list-style-type: none"> • Mastery Exercises • Module Exam
2 - Algebra	<ul style="list-style-type: none"> • Know how to evaluate and manipulate algebraic expressions, equations, and formulas. • Know how to recognize and represent linear relationships algebraically. • Know how to solve linear equations and inequalities. • Know how to represent and solve nonlinear equations and inequalities. • Know how to represent and solve systems of equations and inequalities. • Know how to recognize and represent simple sequences or patterns (e.e. arithmetic, geometric.) 	<ul style="list-style-type: none"> • Mastery Exercises • Module Exam
3 – Functions & Their Graphs	<ul style="list-style-type: none"> • Know how to identify, define, and evaluate functions. • Know how to determine and interpret the domain and the range of a function numerically, graphically, and algebraically. • Understand basic characteristics of linear functions (e.g. slope, intercepts.) • Understand the relationships among functions, tables, and graphs. • Know how to analyze and represent functions that model given information. 	<ul style="list-style-type: none"> • Mastery Exercises • Module Exam
4 – Geometry & Measurement	<ul style="list-style-type: none"> • Know how to solve problems involving perimeter, area, surface area, and volume. • Understand the concepts of similarity and congruence. • Understand properties of lines (e.g. parallel, perpendicular, intersecting) and angles. • Understand properties of triangles. • Understand properties of quadrilaterals (e.g. rectangle, rhombus, trapezoid) and other polygons. • Understand properties of circles. • Know how to interpret geometric relationships in the xy-plane (e.g. transformations, distance, midpoint.) • Understand systems of measurement (e.g. metric, customary.) • Familiarity with how geometric constructions are made. 	<ul style="list-style-type: none"> • Lab • Mastery Exercises • Module Exam

<p>5 – Probability & Statistics</p>	<ul style="list-style-type: none"> ● Know how to interpret and analyze data presented in various forms. ● Know how to represent data in various forms. ● Know how to develop, use, and evaluate probability models. ● Understand concepts associated with measures of central tendency and dispersion (spread.) ● Know how to model and solve problems using simple diagrams, flowcharts, or algorithms. 	<ul style="list-style-type: none"> ● Mastery Exercise ● Module Exam
<p>Calculator Lab</p>	<ul style="list-style-type: none"> ● Prepare to interact with the on-screen calculator during the Praxis exam. 	<ul style="list-style-type: none"> ● Lab
<p>6 – Reflection and Final Exam</p>	<ul style="list-style-type: none"> ● N/A 	<ul style="list-style-type: none"> ● Reflection Paper ● Final Exam