MATH-6409: Learning and Teaching Precalculus

Course Credit: 6.0 NJCTL credits

Dates & Times:
This is a 6-credit, self-paced course, covering 13 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 12-20 hours per module, completing the module slides, readings, short answer assignments, labs, mastery exercises, practice problems, and module exams.

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

COURSE DESCRIPTION:

This course is for teachers to learn the content of PMI Precalculus and how to teach that course to students. Topics include functions; polynomial & rational functions; exponential & logarithmic functions; conic sections; trigonometric functions; analytic trigonometry; polar coordinates & parametric equations; systems & matrices; vectors; and sequences & series.

STUDENT LEARNING OUTCOMES:

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

1. Apply the principles of mathematics in the areas of graphical analysis, graphing functions/equations, solving equations and writing algebraic proofs.
2. Apply student-centered pedagogy to teach mathematics to students.
3. Apply mathematical tools commonly used in precalculus including arithmetic operations, inverse operations, algebraic proofs, problem solving and function/equation analysis.
4. Identify, understand, and communicate the elements, representations, and models of equations and functions to solve word problems.
5. Examine, investigate, and assess the relationships between various mathematical models and their variables.

TEXTS, READINGS, INSTRUCTIONAL RESOURCES

Required Texts:
- This course uses a free digital text book accessible at: https://njctl.org/courses/math/pre-calculus/

Recommended Readings:
- Related articles within short answer assignments.

COURSE REQUIREMENTS:
Consistent attendance in your online courses is essential for your success. Failure to verify your attendance within the first 7 days of this course may result in your withdrawal. If for some reason you would like to drop a course, please contact the Dean of Students.

Online classes have assignments and participation requirements just like on-campus classes. Budget your time carefully. If you are having technical problems, problems with your assignments, or other problems that are impeding your progress, let your instructor know as soon as possible.

GRADE DISTRIBUTION AND SCALE:
In order to receive a Passing grade, the participant must complete the following course requirements: all short answer assignments, mastery exercises, labs, exams, and the reflection paper outlined in the *Assignments* section of the Class Schedule (below).

Grade Distribution:

Module Exams	70%
Final Exam	10%
Labs	6%
Short Answer Assignments	6%
Mastery Exercises	6%
Reflection Paper	2%

Grade Scale:

A	93 – 100
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 /re-purposing 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, Dr. Jamie Korns, additional information to coordinate reasonable accommodations for students with documented disabilities (Jamie@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	Required Readings	Assignments
1 – Functions	• PDFs of presentations within the module.	• Short Answer • Lab • Mastery Exercise • Module Exam
2 – Polynomial & Rational Functions	• PDFs of presentations within the module.	• Short Answer Assignment • Lab • Mastery Exercise • Module Exam

3 – Exponential & Logarithmic Functions	• PDFs of presentations within the module.	• Short Answer Assignment • Lab • Mastery Exercise • Module Exam
4 – Conic Sections	• PDFs of presentations within the module.	• Short Answer Assignment • Lab • Mastery Exercise • Module Exam
5 – Trigonometric Functions	• PDFs of presentations within the module.	• Short Answer Assignment • Lab • Mastery Exercise • Module Exam
6 – Analytic Trigonometry	• PDFs of presentations within the module.	• Short Answer Assignment • Lab • Mastery Exercise • Module Exam
7 – Polar Coordinates & Parametric Equations	• PDFs of presentations within the module.	• Short Answer Assignment • Lab • Mastery Exercise • Module Exam
8 – Matrices & Systems	• PDFs of presentations within the module.	• Short Answer Assignment • Lab • Mastery Exercise • Module Exam
9 – Vectors	• PDFs of presentations within the module.	• Short Answer Assignment • Lab • Mastery Exercise • Module Exam
10 – Sequences & Series	• PDFs of presentations within the module.	• Short Answer Assignment • Lab • Mastery Exercise • Module Exam
11 – Reflection & Final Exam	• N/A	• Reflection Paper • Final Exam