Course Syllabus

- **Course Number:** MATH235L
- **Course Title/Modality:** Pre-Calculus, 100% Online
- **Credit Hours:** 4
- **Semester:** Fall 2024
- **Faculty Name:** Katie Seigle
- **Email Address:** kseigle@ccsnh.edu
- **Office Location:** No on campus office
- **Office Hours:** Thursdays from 6-7 pm via Zoom. Sometimes additional time or one-on-one assistance is needed. The instructor is normally available during the conference hours listed above, or you may make an appointment with the instructor for other times.
- **Prerequisites:** Prerequisite: MATH2100L OR MATH211L OR equivalent with a grade of C or better or competence demonstrated on math placement exam.
- **Course Description:** This course is designed for the student who has a strong math background. Topics in this course include polynomial, rational, trigonometric, logarithmic, and exponential functions and their graphs; trigonometry and the unit circle; trigonometric identities; composite and inverse functions; logarithmic and exponential equations; solution of higher degree equations; quadratic, rational, and absolute value inequalities.
- **Text/Instructional Materials and Equipment Required: Text:** *Precalculus,* an adaptation of *Precalculus* by OpenStax. Students are required to purchase an access code for Lumen Learning OHM online program for all course materials, including homework, quizzes, textbook, and chapter tests. Students must purchase the code through the LRCC bookstore. Weekly modules are set up in Canvas; students are expected to complete work as outlined in these modules and to read any notices posted. Please note use of a scientific calculator (e.g. TI-84) is required in this course.

- **Grading:** The following criteria will determine your grade for the course:

  Category Percentage of Course Grade
  Quizzes: 30% (lowest dropped)
  Tests: 40%
  Homework: 20% (lowest dropped)
  Readings: 10%

  Grading Scale:

A	93-100	B	83-86	C	73-76	D	63-66
A-	90-92	B-	80-82	C-	70-72	D-	60-62
B+	87-89	C+	77-79	D+	67-69	F	0-59

- **Quizzes:** Quizzes will be given weekly. Two tries on each quiz are allowed. Quizzes will be done through Lumen OHM. The lowest quiz grade will be dropped from the overall average.

- **Tests:** Tests will cover all material from the indicated chapters. All tests are cumulative and may contain material from previous tests. Tests will be done through Lumen OHM.

- **Homework:** Weekly homework is assigned through Lumen OHM. Assignments are expected to be completed by Sunday of each week. A 5% grade deduction will be given for late work.

- **Readings:** Weekly readings are assigned through Lumen OHM. I highly recommend completing the readings before attempting the homework. Since this is an online course, this is the virtual "in-class" component.

- **Need for assistance:** Often additional assistance is needed in a math class. I am available during the office hours posted or you may make an appointment with me for other times that can be mutually agreed upon. For quick questions, email is the best method of communication. Lumen OHM provides students with the option to directly email the instructor with the specific problem. Students are encouraged to use this tool.

  Free peer tutoring is available through the learning lab. This is an excellent service that many students take advantage of regularly. It can often make the difference between success and failure. If you think you are going to have difficulty in this class, sign up immediately, since it can sometimes take a little time to connect you with a tutor.

- **Attendance Policy:** Students are expected to complete work on time and maintain communication with the instructor when questions arise. This is an online course, but weekly check-ins will be beneficial (but are not required) for students. Thursday Zoom sessions are optional. These are designed as student-led help sessions.

- **Course Learning Outcomes/Competencies:**

1. Use set builder and interval notation
2. Factor algebraic expressions containing fractional and negative exponents.
3. Solve quadratic and higher degree equations as well as equations containing radicals, absolute value, or rational exponents.
4. Solve quadratic, rational, absolute value, and compound inequalities
5. Find slopes and equations of intersecting, perpendicular, or parallel lines.
6. Recognize equations of horizontal and vertical lines
7. Define function, step function, and piecewise function
8. Find the domain and range of a function and evaluate functions at given values
9. Find a function's difference quotient
10. Identify intervals on which a function increases, decreases, or remains constant
11. Find average rate of change of a function and average velocity
12. Identify even or odd functions and recognize their symmetries
13. Graph functions using vertical and horizontal shifts, reflections, vertical shrinking or stretching, vertical/horizontal/slant asymptotes
14. Combine functions, form composite functions, and find the inverse of a function
15. Solve problems involving maximizing/minimizing quadratic functions
16. Recognize characteristics of graphs of polynomial functions, including local max/min
17. Use factoring, synthetic division, and the Factor Theorem to find zeros of polynomials
18. Evaluate and graph exponential functions
19. Solve exponential equations
20. Evaluate and graph common and natural logarithms
21. Use the properties of logarithms to simplify expressions and solve equations and problems
22. Convert between radians and degrees
23. Find arc length and linear speed
24. Define trig functions using the unit circle and right triangles
25. Use the Law of Sines and the Law of Cosines
26. Solve problems using right triangles and oblique triangles
27. Recognize domain, range, and period of trig functions
28. Graph trig functions
29. Use trig identities to simplify expressions and to solve equations
30. Graph trig functions and variations

- **Academic Integrity, Cheating, and Plagiarism**
  Honesty is expected of all LRCC students. In academic matters this includes the submission of work that clearly indicates its sources. Dishonest acts include cheating and plagiarism, as well as other forms of academic misconduct.

  Cheating is defined as copying or otherwise using material from others, or using sources not approved by faculty.
  Plagiarism is defined as using the work (ideas, words, artwork, etc.) of another person as one's own. The failure to cite sources or the extensive use of others' work in written material are the most common types of plagiarism.

  Cheating, plagiarism, and other forms of academic misconduct are considered serious disciplinary matters and are subject to the same penalties and procedures as other LRCC disciplinary matters. Students should be aware that penalties levied in substantiated cases of cheating or plagiarism may include, but are not limited to, the issuance of a grade of F, which may in turn lead to delay of graduation. Repeated offenses may lead to dismissal from a program or from the college.

  Refer to the Academic Honesty Policy in the Student Handbook.

  Diversity, Equity, and Inclusion Statement
  The content of this course is designed to challenge your viewpoints and perspective as part of your learning experience. It is my intent that students from all backgrounds and perspectives are well-served by this course. Students' learning needs will be addressed both in and out of class, and the diversity of students will benefit the class and will be considered a resource and strength. Materials and activities presented in class will respect diversity including gender identity, sexuality, disability, age, socioeconomic status, ethnicity, race, nationality, religion, and culture.
- Discuss privately with me if you feel your success in the class is being impacted by experiences outside of class. I am always open to listening to students' experiences and want to find acceptable ways to process and address the issue.
- If you feel that something offensive occurred regarding DEI topics in class (by anyone) that made you feel uncomfortable, please let me know.
- Please tell me if you have a name and/or set of pronouns different from those on your official records.
- I encourage you to seek out other resources, such as an academic advisor or another trusted faculty member, if you feel more comfortable addressing issues with these individuals. Anonymous feedback can be submitted here.

I hope this course meets your expectations as a challenging, engaging, and respectful learning experience. If you find this not to be the case, I welcome the opportunity to address your concerns. This is not only a courtesy; it is a matter of process and procedure. Should we fail to arrive at a mutually satisfactory understanding, you should take the matter to my immediate supervisor, Matt Simon at msimon@ccsnh.edu.

Course Schedule (Fall 2024)

Instructor may announce changes to this schedule in Canvas. Students are expected to stay informed of changes.

	Class Topics	Assignments	Outcomes
Week 1 8/26	**Module 1-Introduction to Functions** 1.1 - Functions 1.2 - Domain and Range 1.3 - Rates of Change and Graphs	**Reading #1:** Sections 1.1 – 1.3 **Homework #1:** OHM Student Tutorial, Sections 1.1-1.3 **Quiz#1** **Due 9/1**	**1, 2, 3, 5, 6, 7, 8, 9, 11**
Week 2 9/2	1.4 - Composition of Functions 1.5 - Transformation of Functions 1.6 - Absolute Value Functions 1.7 - Inverse Functions	**Reading #2:** Sections 1.4 – 1.7 **Homework #2**: Sections 1.4-1.7 **Quiz #2, Unit Test #1** **Due 9/8**	**1, 2, 3, 4, 7, 8, 9, 14**
Week 3 9/9	**Module 2 - Linear Functions** 2.1 – Linear Functions 2.2 – Graphs of Linear Functions 2.3 – Modeling with Linear Functions 2.4 - Fitting Linear Models to Data	**Reading #3:** Sections 2.1 – 2.4 **Homework #3**: Sections 2.1 – 2.4 **Quiz #3** **Due 9/15**	**1, 5, 6, 8**
Week 4 9/16	**Module 3 - Polynomials and Rationals** 3.1 – Complex Numbers 3.2 – Quadratic Functions 3.3 - Graphs of Polynomials	**Reading #4:** Sections 3.1 – 3.3 **Homework #4**: Sections 3.1 – 3.3 **Quiz #4** **Due 9/22**	**1, 2, 3, 4, 8, 9, 10, 12**
Week 5 9/23	3.4 – Dividing Polynomials 3.5 - Zeros of Polynomials 3.6 - Rational Functions	**Reading #5:** Sections 3.4 – 3.6 **Homework #5**: Sections 3.6 – 3.7 **Quiz #5** **Due 9/29**	**1, 2, 8, 9, 10, 12, 13, 14, 15, 16, 17**
Week 6 9/30	3.7 – Inverse Functions 3.8 – Modeling Using Variation	**Reading #6:** Sections 3.7 – 3.8 **Homework #6**: Sections 3.7 – 3.8 **Quiz #6, Unit Test #2** **Due 10/6**	**1, 13, 14, 15, 16**
Week 7 10/7	**Module 4 - Exponential and Logarithmic Functions** 4.1 – Exponential Functions 4.2 – Graphs of Exponentials 4.3 – Logarithmic Functions	**Reading #7:** Sections 4.1 - 4.3 **Homework #7**: Sections 4.1 - 4.3 **Quiz #7** **Due 10/13**	**1, 18, 19**
Week 8 10/14	4.4 – Graphs of Logarithmic Functions 4.5 – Logarithmic Properties 4.6 – Exponential and Logarithmic Equations	**Reading #8:** Sections 4.4 – 4.6 **Homework #8**: Sections 4.4 – 4.6 **Quiz #8** **Due 10/20**	**1, 18, 19, 20**
Week 9 10/21	4.7 – Exponential and Logarithmic Models 4.8 – Fitting Models to Data	**Reading #9:** Sections 4.7 – 4.8 **Homework #9**: Sections 4.7 – 4.8 **Quiz #9** **Due 10/27**	**1, 18, 19, 20, 21**
Week 10 10/28	**Module 5 - Systems of Equations** 5.1 – Two Variables 5.2 – Three Variables 5.3 – Systems of Nonlinear Equations	**Reading #10:** Sections 5.1 – 5.3 **Homework #10**: Sections 5.1 – 5.3 **Quiz #10, Unit Test #3** **Due 11/3**	**1, 2, 3, 4**

379 Belmont Road Laconia NH 03246

Week 11 11/4	**Module 6 - Trig Functions** 6.1 – Angles 6.2 – Unit Circle Sine/Cosine 6.3 – Other Trig Functions 6.4 – Right Triangle Trig	**Reading #11:** Sections 6.1 – 6.4 **Homework #11**: Sections 6.1 – 6.4 **Quiz #11** **Due 11/10**	**22, 23, 24**
Week 12 11/11	**Module 7 - Periodic Functions** 7.1 – Graphs of Sine and Cosine 7.2 – Graphs of Others 7.3 – Inverse Trig Functions	**Reading #12:** Sections 7.1 – 7.3 **Homework #12**: Sections 7.1 – 7.3 **Quiz #12, , Unit Test #4** **Due 11/17**	**22, 24, 25, 26, 27, 28**
Week 13 11/18	**Module 8 - Trig Identities** 8.1 – Solving with Identities 8.2 – Sum and Difference 8.3 – Double, Half, and Reduction	**Reading #13:** Sections 8.1 – 8.3 **Homework #13**: Sections 8.1 – 8.3 **Quiz #13** **Due 11/24**	**22, 25, 26, 27, 29, 30**
Week 14 11/25	8.4 - Sum to Product 8.5 - Solving 8.6 - Modeling	**Reading #14:** Sections 8.4 – 8.6 **Homework #14**: Sections 8.4 – 8.6 **Quiz #14** **Due 12/1**	**22, 25, 26, 27, 29, 30**
Week 15 12/2	**Module 10 - Non-Right Triangles** 10.1 – Law of Sines 10.2 – Law of Cosines	**Reading #15:** Sections 10.1 – 10.2 **Homework #15**: Sections 10.1 – 10.2 **Quiz #15, Unit Test #5** **Due 12/8**	**25, 26, 27, 28, 29, 30**
Week 16 12/9	No new material.	**Final Exam** **Due 12/13**	**1-30**

379 Belmont Road Laconia NH 03246