 **Math 141 – Precalculus I**

**Fall Quarter 2023**

Instructor: Angela Frye Telephone:

Room: 205 Email: afrye@freemansd.org

Prep Period: 9:10 – 10:00 am

**\*Please turn off and put away cell phones before entering class. Texting or listening to electronic devices is prohibited once you enter the classroom. Using a prohibited device during an assessment will result in a grade of 0 on that assessment.**

Textbook: *Precalculus: Mathematics for Calculus*, seventh edition, by Stewart, Redlin, and Watson.

Course Description: This course includes modeling, rates of change and structure of functions; especially polynomial, rational, logarithmic and exponential. Problem solving, use of graphing tools and abstract reasoning are emphasized throughout the course.

Homework: Generally, 2-3 hours of outside work is required for every hour of class time; this will vary among students depending upon their level of academic preparation. Homework will not be graded, but you should ask any questions you have about the homework problems. If you need more practice, work more problems.

Attendance: Regular attendance and participation is expected and appreciated.

Quizzes: There will be in class quizzes every Friday (or the last day of the school week). Quizzes should be made up if they are missed as soon as possible. Each quiz should be a learning experience. They shouldn’t be painful. You may retake quizzes up until exam day.

Calculators: For some of your homework problems you will need to use technology to graph. A TI-84 graphing calculator is recommended. If you do not have a graphing calculator there are calculators in my room that you may borrow for the class period. **TI-89, TI-92, HP 48G, or calculators with a built-in library or symbolic manipulation capability are not allowed on exams or quizzes**. Calculators will be prohibited on many quizzes and exams, so be sure that when you’re doing something with your calculator, you understand it well enough to do it without as well.

Tests: Four exams will be scheduled throughout the quarter, as well as a comprehensive final exam. In general, no make-up exams will be given. If you cannot make it to an exam at the scheduled time, please try to notify me in advance. If you are sick on an exam day, you will be expected to make up the exam the day you return. Please note the date of the final exam on the attached schedule, this date is not negotiable. There are no retakes on exams.

 \*If you score 80% or more on the final exam then your final exam score can replace a lower exam score.

# Grading: Grades will be based on the following information:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Net Score (%)** | **Grade** | **Net Score (%)** | **Grade** | **Net Score (%)** | **Grade** |
| 93-100 | A | 80-82 | B- | 67-69 | D+ |
| 90-92 | A- | 77-79 | C+ | 63-66 | D |
| 87-89 | B+ | 73-76 | C | 60-62 | D- |
| 83-86 | B | 70-72 | C- | 59 or below | F |

# 4 Exams 60%

# Quizzes 15%

Final 25%

**Grades will be kept on Canvas and Skyward. Please check your grades periodically and let me know before the final exam if you find an error.**

Misconduct: Conduct in the classroom must not distract from the learning experience for students in the class nor disrupt the ability of the teacher to teach. Tardiness is distracting. Misconduct will be sanctioned according to the Student Conduct Code.

Academic Integrity:

Academic Integrity is the corner stone of the university. Any student who attempts to gain an unfair advantage over other students by violating the Academic Integrity policy may be reported to the university and may receive a sanction up to and including XF for the course, suspension, or expulsion from the university. This policy is on the EWU web site. <https://sites.ewu.edu/policies/policies-and-procedures/wac-172-90-student-academic-integrity-3/>

Tutoring: If you need any extra help, please sign up for Scottie Time or come in before school or after school. Do not wait to get help if you are struggling.

Equal Opportunity Statement:
EWU does not discriminate on the basis of race, color, creed, religion, national origin, sex, pregnancy, sexual orientation, gender identity/expression, genetic information, age, marital status, families with children, protected veteran or military status, HIV or hepatitis C, status as a mother breastfeeding her child, or the presence of any sensory, mental, or physical disability or the use of a trained guide dog or service animal by a person with a disability, as provided for and to the extent required by state and federal laws.

Affirmative Action Statement:
Eastern Washington University adheres to affirmative action policies to increase the number and retention of students and employees from historically underrepresented groups.

Disability Support and ADA:Your ability to succeed in this class is important to me. If you already have an accommodation plan through Student Accommodations and Support Services (SASS) and would like to use your approved accommodations in this class, please let me know as soon as possible. If you do not have an accommodation plan but have a temporary health condition or permanent disability that may require an accommodation, please contact the SASS office at dss@ewu.edu or 509-359-6871. You can also visit their website at <https://inside.ewu.edu/dss/>.

Religious Accommodations: If you would like to request an accommodation for reasons of faith or conscience, please refer to EWU’s policy on Holidays and Religious Accommodations available at <https://inside.ewu.edu/policies/>. Accommodations must be requested within the first two weeks of this course using the Holidays and Religious Accommodations Request form available at <https://inside.ewu.edu/student-life/resources/holidays-and-religious-accommodations-request/>.

Other General Information: This is a 5-credit course that serves as a prerequisite for Math 142. We will discuss functions in a general sense as well as polynomial functions, rational functions, exponential functions, logarithmic functions, and systems of equations and inequalities. You must complete the course with a C or better to move on to Math 142. Some majors require higher than a C. Students earning the minimum score often struggle in subsequent courses, so you should do your best to earn the maximum score possible rather than the minimum.

**A note on homework…**

The purpose of the homework is to understand the concepts presented in class more thoroughly. Do your homework with the **intent of understanding it, not just completing it**. In order to be successful in this class and future mathematics classes, you will need to understand the concepts presented, not just memorize them. As with any college course, you should plan to spend time in and outside of class completing homework and studying. Write any questions you have in the margin next to the problem or in your notes. Be sure to have answers to these questions before the exam. If you are having a difficult time, be sure that you are utilizing all of your resources including Scottie Time, online help (YouTube and Khan Academy), and fellow students. If you get help (from the back of the book, online, a friend,) be sure that you can do the problem on your own without hints or help. Some people need to do homework problems several times before they understand them. As far as what your written homework should look like, I want it to be something that you could use to study for your exam. That means that in most cases the problems are written out, and in the case of long word problems, the important information is written down. Your work should be neat and easy for someone else reading to follow, using correct mathematical notation. Just writing down the answer to a problem is not sufficient.

*EWU expands opportunities for personal transformation through excellence in learning*.

**Math 141 Calendar 2023-2024**

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| --- | --- | --- | --- |
| **Week** | **Dates** | **Sections** | **Topics** |
| 1 | Aug 31-Sep 1 | 1.1-1.2 | Review topics: exponents, radicals, polynomial operations, factoring |
| 2 | Sep 5-8 | 1.3-1.4 | Review topics: rational expressions, complex numbers |
| 3 | Sep 11-15 | 1.5-1.6, 1.8 | Review topics: equations, inequalities |
| 4 | Sep 18-22 | 2.1-2.3 | Functions, continuity, end behavior, symmetry, odd/even functions |
| 5 | Sep 25-29 | 2.4-2.6 | Average rate of change, graphs of functions, piecewise functions |
| 6 | Oct 2-6 | 2.7-2.8, Exam 1 | Combining functions, one-to-one functions and inverses |
| 7 | Oct 10-13 | 3.1-3.2 | Zeros, factors, multiplicity, dividing polynomials |
| 8 | Oct 16-20 | 3.3-3.5 | Theorems and zeros, irrational zeros, Descartes’ Rule of signs, complex zeros, Fundamental Theorem of Algebra |
| 9 | Oct 23-27 | 3.6-3.7 | Rational Functions, polynomial and rational inequalities |
| 10 | Oct 30-Nov 1 | Exam 2  |  |
| 11 | Nov 6-9 | 4.1-4.2 | Exponential function graphs, applications |
| 12 | Nov 13-17 | 4.3-4.5 | Logarithmic functions, laws of logarithms, exponential and logarithmic equations |
| 13 | Nov 20-22 | 4.6 | Nonlinear regression |
| 14 | Nov 27-Dec 1 | Exam 3 and 5.1 | Systems in two variables (linear, inequalities, nonlinear) |
| 15 | Dec 4-8 | 5.2-5.3 | Systems of linear equations in several variables, matrices |
| 16 | Dec 11-15 | 5.4-5.5 | Inverse matrices, Gaussian Elimination |
|  | Dec 18-22 |  | Winter Break |
|   | Dec 25-Jan 1 |   | Winter Break |
| 17 | Jan 2-5 | 5.6-5.7 |  Gauss-Jordan Elimination |
| 18 | Jan 9-13 | Exam 4 |  |
| 19 | Jan 16-24 | Final Exam Review |  |
| 20 | Jan 25-26 | Final Exam |  |

The following objectives will give you an idea of the content that will be discussed this quarter, but they are not the entire focus of the course. In addition to being proficient in these objectives you will improve your problem solving and communication skills throughout the quarter. Since this course is meant to prepare you for Calculus you will have the opportunity to think about functions and their graphs in different ways that you have before, especially when dealing with asymptotes. We will justify results more rigorously and explain details more thoroughly. You will have the opportunity to take a concept or skill that you have learned and apply it in a new context. You will work individually and as the member of a team.

We will also make use of the **Standards for Mathematical Practice**:

1. Make sense of problems and persevere in solving them.

2. Reason abstractly and quantitatively.

3. Construct viable arguments and critique the reasoning of others.

4. Model with mathematics.

5. Use appropriate tools strategically.

6. Attend to precision.

7. Look for and make use of structure.

8. Look for and express regularity in repeated reasoning.

**Course Objectives:**

**Algebra review:**

1. The student will simplify rational exponents.

2. Students will work problems that involve advanced factoring.

3. Students will solve non-linear and absolute value inequalities.

**Functions:**

1. The student will identify and manipulate function notation.

2. The student will be able to graph functions.

3. The student will demonstrate facility with families and transformations of functions

4. The student will demonstrate knowledge of piecewise functions.

5. The student will be able to combine functions.

6. The student will identify and use one-to-one and inverse functions.

**Complex Numbers:**

1. The student will find all complex solutions to quadratic equations.

**Polynomial Functions:**

1. The student will be able to graph polynomial functions.

2. The student will be able to use the division algorithm, and the remainder and factor theorems.

3. The student will be able to find the sum, difference, product, and of polynomials functions.

4. The student will be able to compose two polynomial functions.

5. The student will be able to construct a polynomial given zeros and the degree.

**Rational Functions:**

1. The student will be able to identify a rational function.

2. The student will be able to determine the domain of a rational function.

3. The student will be able to determine the horizontal and vertical asymptotes.

4. The student will be able to find the zeros and holes for each rational function.

**Exponential and Logarithmic Functions.**

1. The student will know the domain, range and shape of an exponential function.

2. The student will know the domain, range and shape of a logarithmic function.

3. The student will know the relationship between exponential and logarithmic functions.

4. The student will be able to find the solution set for equations involving exponential and logarithmic functions.

**Systems of Equations and Inequalities**

1. The student will be able to find the solution set of a system of linear or quadratic equations or inequalities in two variables.

2. The student will be able to use a matrix to solve a system of equations.

3. The student will use the inverse of a matrix to solve a system of equations.

4. The student will be able to find the inverse of 2X2 or 3X3 matrix.

5. The student will be able to graph liner and quadratic inequalities.