

**Bridgewater State University**  
**Elements of Precalculus**  
**MATH 140-004**

INSTRUCTOR	Dr. Vignon Oussa                      Office: CON 441 Phone: (508) 531 - 1829      E-Mail: vignon.oussa@bridgew.edu
CLASS TIME	W 4:45 pm -7:25 pm
OFFICE HOURS	MW: 12:00-1:00, F: 1:00-2:30
TEXT	Sullivan - Precalculus: Concepts through Functions, BSU custom edition.
EQUIPMENT	Graphing Calculator, preferably a TI-83 or TI-84. While you might find the use of a calculator helpful, I do not require it for this course. Please also see the quiz and exam policy below.
COURSE TOPICS	This course provides a review of algebraic fundamentals (exponents, logarithms, linear and quadratic equations) and a study of functions of various types (polynomial, rational, and transcendental). We will cover most sections in chapters 1-4 as well as Appendix A in the text.
COURSE GOALS	<p>Precalculus is the preparation for Calculus, and so the goal of this course is to develop your ability to read, write, think, and do mathematics at the level required for success in Calculus. The study of the topics, concepts, and procedures of Precalculus will deepen your understanding of algebra and extend your ability to apply algebra concepts and procedures at higher conceptual levels in the study of other subjects.</p> <p>However, you cannot succeed at learning new concepts and topics if your algebra skills are not very good. Therefore, I will strongly emphasize the correct manipulation of algebraic expressions in class, assign many algebra-intensive homework exercises for practice, and test your algebraic skills during quizzes and exams throughout the semester.</p> <p>By the end of this course, you will be expected to:</p> <ul style="list-style-type: none"><li>▪ Understand the concept of a function (domain, range, intercepts, graphs, composition of functions, inverse functions etc.)</li><li>▪ Perform the manipulation of algebraic expressions without errors</li><li>▪ Communicate knowledge of algebraic relationships using mathematical terminology appropriately</li><li>▪ Have a good understanding about the shapes of basic functions</li><li>▪ Solve polynomial, rational and transcendental equations</li><li>▪ Solve linear and non-linear inequalities</li><li>▪ Judge the reasonableness of solutions</li><li>▪ Use functions and graphs to obtain information in applied problems</li><li>▪ Apply algebraic methods to solve problems in real world contexts.</li></ul>

- ATTENDANCE** It is necessary to attend class in order to keep up with the material and I expect you to attend every class period. If you must miss a class, you will be responsible for the material covered and homework assigned.
- HOMEWORK** Homework will be done online on blackboard. You will have to log into blackboard every week to access your homework. Here is a link to Blackboard <https://plato.bridgew.edu/webapps/login/>
- GROUPWORK** Throughout the semester, there will be several group projects done in class. Many of the projects will involve completing worksheets by you and your group. The worksheets will then be turned-in the same day. If a student missed a group project because he/she did not attend class for unsupported reasons, **the students cannot make up the work**
- EXAMS** There will be three in-class exams. These exams are scheduled Feb 8, March 25, and April 24. No make-up exams will be given. Calculators are not permitted on any exams unless stated otherwise by the instructor. If you miss an exam, contact the instructor within 24 hours of the exam.
- FINAL EXAM** The final exam for this course is scheduled for Wednesday, May 8. The final exam is cumulative. Calculators are not permitted on the exam unless otherwise stated by the instructor.

**GRADING**

Items	Weights
Exam 1	15%
Exam 2	15%
Exam 3	15%
Homework	15%
Attendance	5%
Group work	10%
Final exam	25%

Letter grades will be assigned as follows:

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

OTHER NOTES	Cell phones and laptops are not required for this course and therefore should not be out or used during class time. Calculators on cell phones and/or laptops may not be used on quizzes or exams.
MATH SERVICES	The Academic Achievement Center offers free, walk-in, mathematics tutoring through the Mathematics Services desk. Check the website at <a href="http://www.bridgew.edu/MathServices">www.bridgew.edu/MathServices</a> to find the Math Services schedule and a list of tutors.
DISABILITY RESOURCES	In compliance with the BSU policy, I am available to discuss appropriate accommodations that you may require as a student with disability. Unless there are unusual circumstances, requests for academic accommodations should be made during the drop/add period along with appropriate documentation. Students are encouraged to register with the Disability Resources Office for disability verification and determination of reasonable academic accommodations.
ACADEMIC DISHONESTY	The academic integrity policy of Bridgewater State University will be strictly enforced. This policy can be found in the BSU Student Handbook. Specifically, the policy requires that students do not cheat, fabricate, plagiarize, or facilitate academic dishonesty. Students who passively engage in cheating (i.e. allowing others to cheat off them) may receive the same consequences as the person copying.

## TOPICS COVERED:

### **Algebra Review: Appendix A**

- A.1 Algebra Essentials
  - A.3 Polynomials
  - A.4 Factoring Polynomials
  - A.6 Rational Expressions
  - A.7  $n^{\text{th}}$  Roots; Rational Exponents
  - A.10 Interval Notation; Solving Inequalities
- Common errors in Algebra

### **Foundations: A Prelude to Functions**

1. The Distance and Midpoints Formula
2. Graphs of Equations in Two Variables; Intercepts; Symmetry
3. Lines

### **1. Functions and Their Graphs**

- 1.1 Functions
- 1.2 The Graph of a Function
- 1.3 Properties of Functions
- 1.4 Library of Functions; Piecewise-defined Functions
- 1.5 Graphing Techniques: Transformations

### **2. Linear and Quadratic Functions**

- 2.1 Properties of Linear Functions and Linear Models
- 2.3 Quadratic Functions and Their Zeros
- 2.4 Properties of Quadratic Functions
- 2.5 Inequalities Involving Quadratic Functions
- 2.6 Building Quadratic Models from Verbal Descriptions and from Data

### **3. Polynomials and Rational Functions**

- 3.1 Polynomial Functions and Models
- 3.2 Properties of Rational Functions
- 3.3 *The Graph of a Rational Function*
- 3.4 *Polynomial and Rational Inequalities*
- 3.5 The Real Zeros of a Polynomial Function

### **4. Exponential and Logarithmic Functions**

- 4.1 Composite Functions
- 4.2 One-to-One Functions; Inverse Functions
- 4.3 Exponential Functions
- 4.4 Logarithmic Functions
- 4.5 Properties of Logarithms
- 4.6 Logarithmic and Exponential Equations
- 4.7 *Financial Models*
- 4.8 *Exponential Growth and Decay Models; Newton's Law; Logistic Growth and Decay Models*