**Mathematics 1113 F (CRN 379)**
Pre-Calculus
Fall Semester 2018
Monday, Wednesday, Friday 2:00-3:10
Instructional Complex 311


INSTRUCTOR: Dr. Allen G. Fuller

OFFICE: Instructional Complex 240


OFFICE HOURS: Monday: 11:10 AM – 1:00 PM
Tuesday: 1:30 PM – 2:30 PM (STEM Center); 2:30 – 3:30 PM
Wednesday: 11:10 AM – 1:00 PM
Thursday: 2:00 PM – 3:30 PM
Friday: 11:10 AM – 12:00 PM
And by appointment


OFFICE PHONE: 678-359-5827

E-MAIL: a_fuller@gordonstate.edu

WEB PAGE: http://www.gordonstate.edu/Faculty/a_fuller/


PREREQUISITE: Grace of C or better in MATH 1111 or Math SAT score of 500 or Math ACT score of 21

CREDIT: 4 semester credit hours

CALCULATOR: A graphing calculator is required. A Texas Instruments TI-83/TI-84 or higher or equivalent is recommended.

TEXT: Mymathlab Student Access Code (New Only). Pearson. ISBN: 9780321199911.

## COURSE DESCRIPTION

This course includes a variety of topics in algebra, trigonometry, and analytic geometry. Some topics covered include conic sections, functions, exponential and logarithmic functions, trigonometric functions and their inverses, and trigonometric identities. This course should provide the student with the algebraic skills and concepts for studying calculus and other courses in science and mathematics. A primary goal of this course is to encourage students to think and to improve their logical reasoning abilities. The course emphasizes the use of algebraic skills and mathematical reasoning in problem solving. MATH 1113 is the standard course for science majors.

This course will emphasize student preparation, critical thinking, and problem solving. To do well in the course, you must ***read the assignment ahead of time*** and prepare questions, do problems from the text, and prepare for test by reviewing those problems worked in class and at home. Over the course of the semester, you should devote about two hours of outside work for each hour in class. Pre-Calculus

demands your time and effort! **First, study the examples worked in class as well as those in the textbook, then practice, practice, practice problems.**

This course, as many other courses, will emphasize the written communication of ideas to others. In this course, you will be communicating mathematical ideas. Just as it is important in an English course to use the proper format in your essays and term papers, it is important to use proper form when communicating mathematical ideas. You will learn how to write mathematics so that it can be understood by others. You should carefully study how mathematics is written in class as well as how it is written in the textbook. You should pattern your writing after these sources.

## COURSE OBJECTIVES

This objective is directed toward the following general education expected outcome of the college:

> **Mathematical Skills:** Students will demonstrate a basic knowledge of the fundamentals of college-level mathematics.

Upon completion of Pre-Calculus, students should have an understanding of:

1. Functions, domain, range; simplifying, composing, and decomposing functions.
2. Graphing and constructing the equations of conic sections.
3. Graphing rational functions.
4. Determining whether a function is one-to-one, the inverses of functions, their domains, and graphs of inverse functions.
5. Graphing exponential and logarithmic functions and solving applications of the exponential and logarithmic functions.
6. Solving right triangles and applications of right triangles.
7. Find the values of trigonometric functions and graphing trigonometric functions.
8. Finding the inverses of trigonometric functions and solving trigonometric equations.
9. Verification and use of basic trigonometric identities.
10. Applications of trigonometry including Law of Sines, Law of Cosines, area of triangles, and polar coordinates.

## METHOD OF EVALUATION

A. Homework will be completed on-line via MyLab|Math. The homework assignments are listed there. Our course ID number is fuller02624. Please login to MyLab|Math as soon as possible. ***The due dates of the homework assignments are given in MyMathLab and will NOT be extended. There are no exceptions to this policy. Please make your plans accordingly.***

B. There will be quizzes approximately every Monday. Quizzes will be at the end of class. ***There will be NO make-up quizzes***. However, I will drop your lowest three quiz grades.

C. There will be four (4) in-class tests given during the semester. The dates of these exams are: Friday, August 31; Wednesday, September 26; Wednesday, October 24; and Monday, November 19, 2018. **If a make-up test is required, there will be 20% penalty unless there is a documented medical excuse or**

**documented death in the immediate family.** A make-up test **must** be taken within **48 hours** of your return to class or by the last day of class (whichever comes first), after which you receive a grade of zero

D. There will also be a comprehensive Final Examination given on Wednesday, December 5, 2018 from 12:30 to 2:30 PM. Gordon College policy states the Final Examinations must be taken at the scheduled time with the following exception. Students who have three or more finals on the same day may petition to take the third and/or fourth exam on another day or days. Student Petition forms are available in the Academic Affairs Office (Lambdin Hall 347). Please make your plans accordingly.

E. The student's final grade will be computed as follows:

| | |
|---|---|
| Homework | 10% |
| Quizzes | 15% |
| Tests | 50% |
| Final Exam | 25% |
| TOTAL | 100% |

F. If your grade on the Final Exam is higher than your highest test score, then the grade on the Final Exam will replace your lowest test score.

G. The following grading scale will be used.

| | | | |
|---|---|---|---|
| 89.5 or above | A | 59.5 to 69.49 | D |
| 79.5 to 89.49 | B | Below 59.5 | F |
| 69.5 to 79.49 | C | | |

## CLASS PROCEDURES

A. **Attendance:** Attendance at class is important. I will take attendance by passing an Attendance Sheet for you to sign. ***If your signature is not beside your name for a particular day, you are considered absent. It is your responsibility to make sure you sign the Attendance Sheet.*** Students are responsible for every instruction, every change in the syllabus, and all material covered in class whether or not they are present. ***Students who enroll in the course late are responsible for material covered before they enrolled.***

B. **Tardiness:** Tardiness to class is NOT tolerated. I will give you a grace period of approximately five minutes to come into the classroom. During that time the door to the classroom will be left open. After that time, I will close the door to the classroom. If the door of the classroom is closed, you may not enter. ***DO NOT ENTER THE CLASSROOM AFTER THE DOOR HAS BEEN CLOSED.***

C. **Attire:** As in all professional environments, appropriate dress is required in the classroom. I reserve the right to refuse you admittance to class if I deem your attire to be inappropriate and/or distracting. Please dress appropriately.

D. **Working Problems:** Most students will benefit by working *many, many* problems for practice. On the Tentative Course Outline is a list of suggested problems for each section covered. These are intended to give the student practice in specific concepts that are taught in class. The problems will not be graded.

However, I strongly encourage you to work them to better prepare for the tests. I will use approximately the first ten minutes of class to answer any questions about the homework problems. Math is not a spectator sport!

E. **Group Work:** I encourage students to work together on homework.

F. **Academic Honesty:** Each student must do his or her own work on exams without any assistance from any outside source not specifically authorized by me. The student handbook details school policies on academic honesty.

G. **Calculator Policy:** A graphing calculator is required for this course. The TI-83 or TI-84 is recommended. Please bring your calculator for all tests. I will not provide calculators for your use. Also, sharing calculators during a test will be considered cheating. Calculators that can manipulate symbolically, *e.g.* the TI-89 or TI-92, are NOT allowed during tests.

H. **Electronic Devices Policy:**
   1. **Cell Phone Use:** Studies show that use of a cell phone or similar device during lecture strongly impairs a student's ability to take notes and remember information later, and that students significantly underestimate how much cell phone use impairs their ability to learn (Sana et al [2]). In class texting has been linked to an average drop of half a letter grade in a course (Kamenetz [1]). Furthermore, use of electronic media by students reduces the ability of other students near them to take notes by 17% (Sana et al [2]).

      Use of cell phones or other electronic communication devices during lecture is prohibited, except where explicitly allowed by the instructor. Unauthorized use can result in a loss of some or all of a student's participation points for the day, at the discretion of the instructor.

      [1] A. Kamenetz. "How to get students to stop using their cellphones in class". NPR Ed, Nov 10 2015.

      [2] F. Sana, T. Westin, and N. Cepada. "Laptop multitasking hinders classroom learning for both users and nearby peers". Computers and Education,62:24-31, Mar 2013.
   2. **Electronic Devices During Tests and Quizzes:** The use of electronic devices (iPhone, iPad, smartphones, tablets, laptops, iPods, etc.) is prohibited during quizzes and tests.

I. **Testing Procedure:** You will be asked to leave books and other personal items at the front of the room during tests and exams. For that reason, you may want to leave expensive electronic devices and other valuable articles in cars or at home. The instructor will remain in the classroom during tests and exams, but he/she cannot guarantee the safety of easily pocketed items.

J. **Statute of Limitations:** While the instructor does his best to accurately review and assess student work, instances may occur where an error in assigning a grade may occur. The student has exactly three class periods from the time of receiving a grade to ask the instructor to review the grade. After this time has elapsed, all grades will be considered carved in stone.

K. **Classroom Etiquette:** Students are expected to treat the instructor and other students with respect. Please refrain from the following during class time:
   1. Talking with other students (other than during classroom or group activities).
   2. Leaving class early (other than an emergency).
   3. Leaving the desk to sharpen a pencil in the middle of a lecture.

4. Cell phones ringing during class. Placing or receiving cellular phone calls during class.
5. I-pods or other music listening devices should NOT be in use during class time.

L. **Gordon E-mail:** Your Gordon e-mail address is where ***all*** official communication from Gordon College is sent. This includes registration information, etc. Please check your Gordon e-mail account periodically for important information. You should also delete junk e-mail to keep your mailbox from getting full. If your mailbox is full, you may not receive important e-mail notifications. Also, if I need to communicate with you via e-mail, I will send the message to your Gordon e-mail account.

M. **ADA and 504:** If you have a documented disability as described by the Americans with Disabilities Act (ADA) and the Rehabilitation Act of 1973, Section 504, you may be eligible to receive accommodations to assist in programmatic and/or physical accessibility. The Counseling and Accessibility Services office located in the Student Center, Room 212 can assist you in formulating a reasonable accommodation plan and in providing support in developing appropriate accommodations to ensure equal access to all GSC programs and facilities. Course requirements will not be waived, but accommodations may assist you in meeting the requirements. For documentation requirements and for additional information, contact Counseling and Accessibility Services at 678-359-5585.

N. **Title IX:** Gordon State College is committed to providing an environment free of all forms of discrimination and sexual harassment, including sexual assault, domestic violence, dating violence and stalking. If you (or someone you know) has experienced or experiences any of these incidents, know that you are not alone. All faculty members at Gordon State College are mandated reporters. Any student reporting any type of sexual harassment, sexual assault, dating violence, domestic violence or stalking must be made aware that any report made to a faculty member under the provisions of Title IX will be reported to the Title IX Coordinator or a Title IX Deputy Coordinator. If you wish to speak with someone confidentially, you must contact the Counseling and Accessibility Services office, Room 212, Student Life Center. The licensed counselors in the Counseling Office are able to provide confidential support. Gordon State College does not discriminate against any student on the basis of pregnancy, parenting or related conditions. Students seeking accommodations on the basis of pregnancy, parenting or related conditions should contact Counseling and Accessibility Services regarding the process of documenting pregnancy related issues and being approved for accommodations, including pregnancy related absences as defined under Title IX.

O. **House Bill 280:** For information regarding House Bill 280, see the University System of Georgia at the following link: http://www.usg.edu/hb280.

P. **Religious Holidays:** Gordon State College acknowledges that the academic calendar can sometimes conflict with major holidays from among our diverse religious traditions. If a student must miss class due to the observance of a religious holiday, that absence may be excused. To be excused, the student must inform his/her instructors before the absence and make alternate arrangements for any work due at the time of the absence. An excused absence for the observance of a religious holiday does not excuse student from responsibility for required course work.

## OFFICE PROCEDURES

When you come to my office for help, please be prepared by doing the following.

1. Bring your textbook, your calculator, and you class notes.
2. Make sure you have read the section in the text, read the class notes, and studied the examples.
3. Be prepared to show me at least two odd-numbered problems from the section that you have worked.
4. Bring your incomplete or incorrect solution to each problem about which you have a question.
5. Ask for help as early as possible. **Don't wait until the day of a test! I will *NOT* help you if you come for help the day of the test!!**

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**TENTATIVE COURSE OUTLINE**

MATH 1113

Fall Semester 2018

| Date | Section | Homework |
|---|---|---|
| Wed, Aug 8 | 3.1: Functions | 7-18 all, 19-95 odd |
| Fri, Aug 10 | 3.1 (concluded) | |
| Mon, Aug 13 | 3.2: The Graph of a Function | 3-10 all, 11-29 odd |
| Wed, Aug 15 | 3.3: Properties of Functions | 6-12 all, 13-75 odd |
| Fri, Aug 17 | 3.4: Library of Functions; Piecewise-defined Functions | 4-10 all, 11-47 odd |
| Mon, Aug 20 | 3.5: Graphing Techniques; Transformations | 1-6 all, 7-65 odd |
| Wed, Aug 22 | 6.1: Composite Functions | 1-7 all, 9-55 odd |
| Fri, Aug 24 | 6.2: One-to-One Functions; Inverse Functions | 5-12 all, 13-75 odd, 85, 89 |
| Mon, Aug 27 | 5.2: Properties of Rational Functions | 5-14 all, 15-55 odd |
| Wed, Aug 29 | 5.3: The Graph of a Rational Function | 2-6 all, 7-53 odd |
| Fri, Aug 31 | **TEST I** | |
| Mon, Sep 3 | ***Labor Day Holiday—No Class*** | |
| Wed, Sep 5 | 7.1: Angles and Their Measure | 3-10 all, 13-85 odd, 91 |
| Fri, Sep 7 | 7.1: Angles and Their Measure (concluded) | |
| Mon, Sep 10 | 7.2: Right-Triangle Trigonometry | 3-10 all, 11-63 odd |
| Wed, Sep 12 | 7.3: Computing the Values of Trigonometric Functions of Acute Angles | 1-6 all, 7-47 odd |
| Fri, Sep 14 | 7.4: Trigonometric Functions of General Angles | 1-10 all, 11-101 odd |
| Mon, Sep 17 | 7.5: Unit Circle Approach; Properties of the Trigonometric Functions | 4-10 all, 11-89 odd |
| Wed, Sep 19 | 7.6: Graphs of Sine and Cosine Functions | 3-10 all, 11-21 odd, 23-32 all, 33-73 odd |
| | 7.8: Phase Shift, Sinusoidal Curve Fitting | 1. 2, 3, 5, 7, 13, 15, 17 |
| Fri, Sep 21 | 7.7: Graphs of Tangent, Cotangent, Cosecant, and Secant Functions | 3-6 all, 7-39 odd |
| Mon, Sep 24 | Conclusion of Graphing of Trigonometric Functions | |
| Wed, Sep 26 | **TEST II** | |
| Fri, Sep 28 | 8.1: Inverse Sine, Cosine, and Tangent Functions | 7-14 all, 15-73 odd |
| | 8.2: The Inverse Trigonometric Functions (Continued) | 4-8 all, 9-43 odd |
| Mon, Oct 1 (Midterm day) | 8.3: Trigonometric Equations | 7-12 all, 13-81 odd |

| Date | Section | Homework |
|---|---|---|
| Wed, Oct 3 | 8.4: Trigonometric Identities | 3-10 all, 11-103 odd |
| Fri, Oct 5 | 8.5: Sum and Difference Formulas | 5-12 all, 13, 15, 17, 19, 21, 25, 27, 31, 33, 35 (a)-(c), 37 (a)-(c), 39 (a)-(c), 41, 49, 51, 53, 57, 59, 61, 63, 71, 75-81 odd |
| Mon, Oct 8 – Tue, Oct 9 | ***Fall Break—No Class*** | |
| Wed, Oct 10 | 8.6: Double-Angle and Half-Angle Formulas | 1-8 all, 9, 13, 21, 25, 29, 31, 33, 37, 39, 49, 55, 71-77 odd |
| Fri, Oct 12 | 9.1: Applications Involving Right Triangles | 5-8 all, 9-27 odd, 31, 35, 37, 39; pages 529-530: 63-75 odd |
| Mon, Oct 15 | 9.2: Law of Sines | 4-8 all, 9-49 odd |
| Wed, Oct 17 | 9.3: Law of Cosines | 3-8 all, 9-49 odd |
| Fri, Oct 19 | 9.4: Area of a Triangle | 2-6 all, 7-25 odd |
| Mon, Oct 22 | Catch-Up Day | |
| Wed, Oct 24 | **TEST III** | |
| Fri, Oct 26 | 6.3: Exponential Functions | 6-14 all, 15-34 odd, 35-42 all, 43-93 odd |
| Mon, Oct 29 | 6.4: Logarithmic Functions | 4-10 all, 11-63 odd, 65-72 all, 73-111 odd |
| Wed, Oct 31 | 6.5: Properties of Logarithms | 1-12 all, 13-83 odd |
| Fri, Nov 2 | 6.6: Logarithmic and Exponential Equations | 5-55 odd |
| Mon, Nov 5 | 6.7: Financial Models | 3-6 all, 7-53 odd |
| Wed, Nov 7 | 6.8: Exponential Growth and Decay; Newton's Law of Cooling; Logistic Growth and Decay Models | 1-13 odd, 14, 15-21 odd |
| Fri, Nov 9 | 11.1: Conics | |
| | 11.2: The Parabola | 6, 7, 9-20 all, 21-63 odd |
| Mon, Nov 12 | 11.3: The Ellipse | 7-6 all 17-63 odd |
| Wed, Nov 14 | 11.4: The Hyperbola | 7-16 all, 15-18 all, 19-61 odd |
| Fri, Nov 16 | Catch-Up Day | |
| Mon, Nov 19 | **TEST IV** | |
| Wed, Nov 21 – Fri, Nov 23 | ***Thanksgiving Holiday—No Class*** | |
| Mon, Nov 26 | 10.1: Polar Coordinates | 5-18 all, 19-83 odd |
| | 10.2: Polar Equations and Graphs | 7-14 all, 15-29 odd, 31-38 all, 39-53 odd 59, 61 |
| Wed, Nov 28 | Review | |
| **Wed, Dec 5 12:30 PM** | **Final Exam** | |