**Mathematics 1113 B (CRN 377)**

Precalculus

Spring Semester 2019

MWF 1:00 - 2:10

Instructional Complex 411

Instructor: Dr. S. Karmakar

Office: Instructional Complex 231

Office Hours: 10:15-11:00, 12:00-1:00, 2:15–3:15 MWF

And by appointment

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Prerequisite: A grade of “C” or better in MATH 1111 or 500 MATH SAT (21 ACT)

Credit: 4 semester credit hours

Calculator: Graphing calculator required. TI-83/84 recommended.

Text: Sullivan, Michael. 2016. *Algebra & Trigonometry* 10th edition. Pearson Prentice Hall.

ISBN : 9780321998590

**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. College Algebra 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 College Algebra, students should have an understanding and be able to demonstrate their knowledge 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. 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 two quiz grades.

B. There will be **four (4) in-class tests** given during the semester. **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

C. There will also be a **comprehensive Final Examination** given on **Tuesday, May 7, 2019 at 10:15 AM**. Gordon State 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.

D. The student’s final grade will be computed as follows:

|  |  |
| --- | --- |
|  |  |
| Quizzes | 15% |
| Tests | 60% |
| Final Exam | 25% |
| TOTAL | 100% |

E. 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.

F. 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

**Other Information**

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. **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.

C. **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!

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

E. **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.

F. **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.

G. **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.

H. **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.

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

J**. 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.

K. **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.

L. **Electronic Devices Policy:** The use of electronic devices (iPhone, iPad, smartphones, tablets, laptops, iPods, etc.) is prohibited during class and testing.

M. **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. Consistently late coming to class.

5. Cell phones ringing during class. Placing or receiving cellular phone calls during class.

6. I-pods or other music listening devices should NOT be in use during class time or during tests and quizzes.

**Office Procedures**

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

1. Bring your textbook if possible, 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!**

**Tentative Course Outline**

Spring Semester 2019

**Tentative Course Outline**

| **Date** | **Section** | **Suggested Homework Problems** |
| --- | --- | --- |
| Wed, Jan 9 | 3.1: Functions | 15-85 odd |
| Fri, Jan 11 | 3.2: The Graph of a Function | 9-27 odd |
| Mon, Jan 14 | 3.3: Properties of Functions | 11-61 odd |
| Wed, Jan 16 | 3.4: Library of Functions; Piecewise-defined Functions | 9-45 odd |
| Fri, Jan 18 | 3.5: Graphing Techniques; Transformations | 7-73 odd |
| **Mon, Jan 21** | **MLK Holiday- College closed** |  |
| Wed, Jan 23 Fri, Jan 25  Mon, Jan 28 | 6.1: Composite Functions | 7-57 odd |
| 6.2: Inverse Functions | 11-71 odd, 81-85 odd |
| Wed, Jan 30  Fri, Feb 1 | 5.2: Properties of Rational Functions | 13-52 odd |
| 5.3: Graphs of Rational Functions | 7-45 odd |
| **Mon, Feb 4** | **TEST I** |  |
| Wed, Feb 6  Fri, Feb 8 | 7.1: Angles and Their Measure | 11-91 odd |
| 7.2: Right-Triangle Trigonometry | 11-61 odd |
| Mon, Feb 11  Wed, Feb 13  Fri, Feb 15 | 7.3: Computing the Values of Trigonometric Functions of Acute Angles | 7-45 odd |
| 7.4: Trigonometric Functions of General Angles | 11-105 odd |
| Mon, Feb 18 | 7.5: Unit Circle Approach; Properties of the Trigonometric Functions | 9-87 odd |
| Wed, Feb 20  Fri, Feb 22 | 7.6: Graphs of Sine and Cosine Functions | 9-19 odd, 21-34 all, 35-75 odd |
| 7.8: Phase Shift; Sinusoidal Curve Fitting | 3-17 odd |
| Mon, Feb 25  Wed, Feb 27 | 7.7: Graphs of Tangent, Cotangent, Cosecant, and Secant Functions  Review | 7-31 odd |
| Fri, March 1 | **TEST II** |  |
| Mon, March 4  Wed, Mar 6 | 8.1: Inverse Sine, Cosine, and Tangent Functions | 13-55 odd |
| 8.2: The Inverse Trigonometric Functions (Continued) | 9-35 odd |
| Fri, Mar 8    Mon, Mar 11 – Fri, Mar 15 | 8.3: Trigonometric Equations | 11-43 odd, 57-79 odd |
| ***Spring Break – No class*** |  |
| Wed, Mar 18  Fri, Mar 20  Mon, Mar 23 | 8.4 Trigonometric Identities  8.5: Sum and Difference Formulas  8.6: Double-Angle and Half-angle Formulas | 9-79 odd  11-37 odd  7, 11, 19-25 odd |
| Mon, Mar 25 | 9.1: Applications Involving Right Triangles | 9-25 odd |
| Wed, Mar 27 | 9.2: Law of Sines | 9-35 odd |
| Fri, Mar 29  Mon, April 1  Wed, Apr 3 | 9.3: Law of Cosines | 9-45 odd |
| 9.4: Area of a Triangle, **Review**  **TEST III** | 9-23 odd, 27-31 odd |
| Fri, Apr 5 | 6.3: Exponential Functions | 11-99 odd |
| Mon, Apr 8  Wed, Apr 10 | 6.4: Logarithmic Functions | 9-115 odd |
| 6.5: Properties of Logarithms | 7-77 odd |
| Fri, Apr 12 |  |  |
| 6.6: Logarithmic and Exponential Equations | 5-49 odd |
| Mon, Apr 15 | 6.7: Compound Interest | 3-55 odd |
| Wed, Apr 17 | 6.8: Exponential Growth and Decay, Newton’s Law, Logistic Models | 1-15 odd, 20, 21 |
| Fri, Apr 19  Mon, Apr 22  **Wed, Apr 24** | 11.1: Conics |  |
| 11.2: The Parabola  Review  **TEST IV** | 11-61 odd |
| Fri, Apr 26 | 11.3: The Ellipse  11.4: The Hyperbola | 13-67 odd  15-65 odd |
| Mon, Apr 29 | 10.1 Polar Coordinates | 9-16 all, 17-81 odd |
|  | 10.2: Polar Equations and Graphs | 13-51 odd, 57, 59 |
| Wed, May 1 | Review |  |
| **Tue, May 7** | **Final Examination 10:15 AM – 12:15 PM** |  |