DEPARTMENT OF MATHEMATICS AND STATISTICS
PRE-CALCULUS B
MATH 2212-002/2012-002 SPRING 2024
COURSE SYLLABUS

Instructor: Jacob Pratscher
Email: Jacob.Pratscher@sfasu.edu
Office: Math Building Room 348
Phone: (936)468-1869
Office hours: MWF 10:00-10:50 AM, TR 11:00-11:50 AM
Class Meetings: MWF 9:00-9:50 AM, Math Build, Room 208
Course Link: http://www3.sfasu.edu/math/docs/syllabi/MATH2212Syllabus.pdf

COURSE DESCRIPTION: This is a preparatory course for the calculus sequence, including triangular and circular trigonometric function derivation; special triangles; graphs, domains/ranges, asymptotes and transformation of circular functions and their inverses; fundamental trigonometric identities; conic sections; and polar and rectangular coordinate systems.

TEXT/MATERIALS: Precalculus, A Prelude to Calculus, 3nd edition, by Axler (ISBN-13: 978-1119055815 ISBN-10: 1119055814). You can also buy an electronic copy, but access to WileyPlus is NOT needed. (As a supplement to the course, the instructor will occasionally draw from is M. Boelkins, Active Prelude to Calculus, 2019, http://activecalculus.org)

CALCULATORS: Each student will need a scientific calculator to use during exams. No graphing calculators or cell phone calculators will be allowed during exams. Having software available like Desmos, will be useful in this course.

WITHDRAWL: The last day to withdraw from a full-session course with a grade of W is April 10, 2024. Note: You can find the withdrawal dates and procedures on: https://www.sfasu.edu/registrar/registration-information/dates-deadlines and https://www.sfasu.edu/registrar/registration-information/how-to-drop-withdraw

GRADING: Grades will be assigned according to the following percentages.
- Two in-class exams worth 20% each, dates on Tentative Class Schedule
- Final Exam worth 30%
- Quizzes worth a total of 20%.
- Discussions worth a total of 10%

HOMEWORK: Homework is necessary for success but will not be graded. For guidance, see the suggested exercises.

DISCUSSIONS: There will be various discussions held on D2L throughout the course. Discussions will be graded according to participation. Participation means well thought out and respectful responses and answers to the proposed questions with a full explanation of the thought process. If written work is requested, these are to be detailed explanations using complete sentences, anything less will not receive credit. Students are also expected to respond to work proposed from fellow classmates in a respectful manner.

QUIZZES: At the beginning of class the instructor reserves to right to present a short quiz. If a quiz is presented at the beginning of class, you will have the first five minutes of class to answer the question and turn in your work. Quiz questions will be based on the previous day’s work and the corresponding suggested homework exercises. Quizzes will be graded out of 2 points, 1 point for attempting the question, and 1 point if the answer is correct. The top 20 quizzes will be kept for the final grade.

UNIT EXAMS: There will be two one-hour exams, each exam is worth twenty percent of the grade. The exams will be given in class. You may find dates on the tentative schedule, note that dates may change due to pace of course.
MAKE-UP and LATEWORK POLICIES: No make-ups are allowed without prior discussion beforehand with the instructor, or in case of emergency. If there are concerns with completing any work on-time or being prepared for an exam please contact the instructor immediately. The decision of a make-up or accepting late work is left to the discretion of the instructor and is final.

ACADEMIC HONESTY: The instructor encourages students to discuss homework and course material. However, each student is expected to turn in their own work on graded assignments and should be explained in the student’s own words. If the work is not the student’s own, then this can lead to a grade of zero on the assignment. Any additional material present that was not specified by the instructor, or violations of academic integrity that occur during quizzes and exams is not permitted and may lead up to a zero on the exam or a failing grade in the course.

FINAL EXAM: The Final is scheduled for Wednesday May 8th of 2024 from 8:00 AM to 10:00 AM in Math Building Room 208. The final exam will be a comprehensive examination, worth thirty percent of the final grade.

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<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>90%-100%</td>
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<tr>
<td>B</td>
<td>80%-89.99%</td>
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<td>C</td>
<td>70%-79.99%</td>
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<td>D</td>
<td>60%-69.99%</td>
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<td>F</td>
<td>59.99% and Lower</td>
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TENTATIVE SCHEDULE: Note that material dates may change according to pace of the course.

<table>
<thead>
<tr>
<th>Week of</th>
<th>Monday</th>
<th>Wednesday</th>
<th>Friday</th>
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<tbody>
<tr>
<td>1/18-1/19</td>
<td></td>
<td></td>
<td>First Day of Class Introduction/Syllabus/ Sec 4.1</td>
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<td>1/22-1/26</td>
<td>Sec 4.1</td>
<td>Sec 4.2</td>
<td>Sec 4.2</td>
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<td>1/29-2/2</td>
<td>Sec 4.3</td>
<td>Sec 4.3</td>
<td>Sec 4.4</td>
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<td>2/5-2/9</td>
<td>Sec 4.4</td>
<td>Sec 4.5</td>
<td>Sec 4.6</td>
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<tr>
<td>2/12-2/16</td>
<td>Sec 5.1</td>
<td>Review</td>
<td>Exam 1</td>
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<td>2/19-2/23</td>
<td>Sec 5.2</td>
<td>Sec 5.2</td>
<td>Sec 5.3</td>
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<td>2/26-3/1</td>
<td>Sec 5.3</td>
<td>Sec 5.4</td>
<td>Sec 5.4</td>
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<td>3/4-3/8</td>
<td>Sec 5.5</td>
<td>Sec 5.5</td>
<td>Sec 5.6</td>
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<tr>
<td>3/11-3/15</td>
<td>No Class Due To</td>
<td>Spring Break----</td>
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<tr>
<td>3/18-3/22</td>
<td>Sec 5.7</td>
<td>Sec 5.7</td>
<td>Sec 7.1</td>
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<tr>
<td>3/25-3/29</td>
<td>Review</td>
<td>Exam 2</td>
<td>No Class Due to Easter Holiday</td>
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<tr>
<td>4/1-4/5</td>
<td>Sec 7.1</td>
<td>Sec 7.2</td>
<td>Sec 7.2</td>
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<tr>
<td>4/8-4/12</td>
<td>Sec 7.3</td>
<td>Sec 7.3</td>
<td>Sec 7.4</td>
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<tr>
<td>4/15-4/19</td>
<td>Parabolas</td>
<td>Parabolas</td>
<td>Ellipses</td>
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<tr>
<td>4/22-4/26</td>
<td>Ellipses</td>
<td>Hyperbolas</td>
<td>Hyperbolas</td>
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<tr>
<td>4/29-5/3</td>
<td>Rotations</td>
<td>Rotations</td>
<td>Review</td>
</tr>
<tr>
<td>Finals Week</td>
<td></td>
<td></td>
<td>Final Exam 8:00-10:00 AM, Math Building Room 208</td>
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NOTES TO THE STUDENT: Precalculus A and B are prep courses for the calculus sequence at SFA which prepares you for calculus in the obvious way by reviewing prerequisite concepts and skills that you will need to retain for success in understanding the calculus. The other, less obvious way that Precalculus A and B prepare you for the calculus sequence is by getting you accustomed to a fast-paced, content-driven course. To do well in the Precalculus sequence and later in the calculus sequence, you need to keep up. That does NOT mean that you need to have mastered the material before the class even starts. It DOES mean that you need to try the homework each night to see if you can do it. If you can, great; keep rolling. If you can’t do the homework, seek help immediately the next day in class when I ask if there are homework questions or in my office hours. Please don’t wait until the end of the semester if you need help. By that time, it’s too late.
Course description: Preparatory of the calculus sequence: Triangular and circular trigonometric function derivation; special triangles; graphs, domains/ranges, asymptotes, and transformation of circular functions and their inverses; fundamental trigonometric identities; conic sections; polar and rectangular coordinate systems.

Credit hours: 2

The following is an excerpt from SFA Policy 5.4:

The federal definition of a credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally established equivalency that reasonably approximates:

1. Not less than one hour of classroom or direct faculty instruction and a minimum of two hours out-of-class student work each week for approximately fifteen weeks for one semester or trimester hour of credit, or 10 to 12 weeks for one quarter hour of credit, or the equivalent amount of work over a different amount of time, or;

2. At least an equivalent amount of work as outlined in item 1 above for other academic activities as established by the institution including laboratory work, internships, practica, studio work, and other academic work leading to the award of credit hours.

To this end, all students in courses offered by the Department of Mathematics and Statistics that wish to be successful should plan to spend a minimum of two hours outside of class for every credit hour associated with this course. Expected activities to be completed in the time outside of class include reviewing notes from previous class meetings, reading assigned course resources, completing all assigned exercises and projects, and performing periodic assessment preparation.

Course Prerequisites and Corequisites: Credit for Math 2211 or permission of the department chair

Course outline:

- Trigonometry
  - Triangular/circular functions
    - Definitions in both contexts
    - Special triangles and values of the trigonometric functions at the standard multiples
    - Graphs, domains/ranges, asymptotes, and transformations of the circular functions
  - Trigonometric Identities
    - Basic: reciprocal, quotient and Pythagorean identities
    - Others: sum/difference identities, double- and half-angle identities
  - Inverse trigonometric functions
    - Domains/ranges, reference angles
  - Graphs
  - Solving trigonometric equations
  - Law of Sines and Cosines

- Vectors & Analytic Geometry
  - Polar Coordinates
  - Vectors

Approximate time spent: 65%

- Vectors & Analytic Geometry

Approximate time spent: 35%
- Complex numbers and the complex plane
- Cartesian coordinate system/distance formula
- Conic sections: parabola, ellipse, hyperbola
- Transformations (including rotations)
- Polar coordinates

**Student Learning Outcomes (SLO):** At the end of MTH 2212, a student who has studied and learned the material should be able to:

1. Define triangular/circular trigonometric functions.
2. Determine the domains/ranges/graphs of circular trigonometric functions and their transformations.
3. Identify special triangles and values of the trigonometric functions at the standard multiples.
4. Extend the definition of the trigonometric functions and the Pythagorean Theorem to obtain the reciprocal, quotient, and Pythagorean identities.
5. Understand the sum and difference formulas and use them to generate the double- and half-angle formulas.
6. Restrict the domain of the trigonometric functions so that the inverse trigonometric functions may be defined.
7. Solve trigonometric equations.
8. Use Law of Sines/Cosines to solve triangles.
9. Recognize that the distance formula is an application of the Pythagorean Theorem.
10. Define and analyze the conics: circles, ellipses, parabolas, and hyperbolas.
11. Convert the polar equation of a conic to a rectangular equation and vise versa.

There are no specific program learning outcomes for this major addressed in this course. It is specifically intended as preparation for the calculus sequence.

This course meets educator preparation standards for one or more certification programs; a complete listing of all the educator preparation standards this course meets can be found at: https://sfasu.edu/docs/jacksteach/jacksteach-standards-alignment-chart.xlsx.

**Academic Integrity**

The Code of Student Conduct and Academic Integrity outlines the prohibited conduct by any student enrolled in a course at SFA. It is the responsibility of all members of all faculty, staff, and students to adhere to and uphold this policy.

Articles IV, VI, and VII of the new Code of Student Conduct and Academic Integrity outline the violations and procedures concerning academic conduct, including cheating, plagiarism, collusion, and misrepresentation. Cheating includes, but is not limited to: (1) Copying from the test paper (or other assignment) of another student, (2) Possession and/or use during a test of materials that are not authorized by the person giving the test, (3) Using, obtaining, or attempting to obtain by any means the whole or any part of a non-administered test, test key, homework solution, or computer program, or using a test that has been administered in prior classes or semesters without permission of the Faculty member, (4) Substituting for another person, or permitting another person to substitute for one’s self, to take a test, (5) Falsifying research data, laboratory reports, and/or other records or academic work offered for credit, (6) Using any sort of unauthorized resources or technology in completion of educational activities.

Plagiarism is the appropriation of material that is attributable in whole or in part to another source or the use of one’s own previous work in another context without citing that it was used previously, without any indication of the original source, including words, ideas, illustrations, structure, computer code, and other expression or media, and presenting that material as one’s own academic work being offered for credit or in conjunction with a program course or degree requirements.

Collusion is the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any provision of the rules on academic dishonesty, including disclosing and/or distributing the contents of an exam.

Misrepresentation is providing false grades or résumés; providing false or misleading information in an effort to receive a postponement or an extension on a test, quiz, or other assignment for the purpose of obtaining an academic or financial benefit for oneself or another individual or to injure another student academically or financially.
Withheld Grades Semester Grades (SFA Policy 5.5)
Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average. The circumstances precipitating the request must have occurred after the last day in which a student could withdraw from a course. Students requesting a WH must be passing the course with a minimum projected grade of C. For additional information, go to https://www.sfasu.edu/policies/course-grades-5.5.pdf.

Students with Disabilities
To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to http://www.sfasu.edu/disabilityservices.

Student Wellness and Well-Being
SFA values students’ overall well-being, mental health and the role it plays in academic and overall student success. Students may experience stressors that can impact both their academic experience and their personal well-being. These may include academic pressure and challenges associated with relationships, emotional well-being, alcohol and other drugs, identities, finances, etc.

If you are experiencing concerns, seeking help, SFA provides a variety of resources to support students’ mental health and wellness. Many of these resources are free, and all of them are confidential.

On-campus Resources:
The Dean of Students Office (Rusk Building, 3rd floor lobby)
www.sfasu.edu/deanofstudents
936.468.7249
dos@sfasu.edu

SFA Human Services Counseling Clinic Human Services, Room 202
www.sfasu.edu/humanservices/139.asp
936.468.1041

The Health and Wellness Hub “The Hub”
Location: corner of E. College and Raguet St.

To support the health and well-being of every Lumberjack, the Health and Wellness Hub offers comprehensive services that treat the whole person – mind, body and spirit. Services include:

- Health Services
- Counseling Services
- Student Outreach and Support
- Food Pantry
- Wellness Coaching
- Alcohol and Other Drug Education

www.sfasu.edu/4008
Crisis Resources:

- Burke 24-hour crisis line: 1.800.392.8343
- National Suicide Crisis Prevention: 9-8-8
- Suicide Prevention Lifeline: 1.800.273.TALK (8255)
- Crisis Text Line: Text HELLO to 741-741

Acceptable Student Behavior

Classroom behavior should not interfere with the instructor’s ability to conduct the class or the ability of other students to learn from the instructional program (see the Student Conduct Code, policy 10.4). Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic or other penalties. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc. The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom.

Date of document: 08/23/2023