Instructor: Dr. Sean Ellermeyer, SC 524, (770) 423-6129 (Math dept: (770) 423-6327), email: sellerme@kennesaw.edu, Web Site: http://math.kennesaw.edu/~sellerme.

Time and Location: Mondays and Wednesdays from 11 a.m. until 1:45 p.m. in BB 382A.

Office Hours: By appointment.


Other Required Materials: TI-83 Graphing Calculator (or equivalent) and graph paper.

Course Description: This course covers the fundamentals of trigonometry that are needed to begin the study of calculus. Topics to be covered will include the triangular and circular views of trigonometric functions, proofs of trigonometric identities, inverse trigonometric functions, solving trigonometric equations, polar coordinates, vectors, and applications.

Learning Outcomes

1. Be able to prove the Pythagorean Theorem.

2. Demonstrate understanding of the six trigonometric ratios of right triangles.

3. Solve problems involving right triangles.

4. Be able to solve problems involving arc length and angular speed.

5. Demonstrate analytical, numerical, and graphical understanding of the circular (trigonometric) functions.

6. Demonstrate understanding of elementary transformations of the sine and cosine functions.

7. Memorize and be able to prove basic trigonometric identities including the Pythagorean identities, sum and difference identities, cofunction identities, double angle identities, etc.

8. Be able to prove trigonometric identities (or to disprove false “identities”).

9. Be able to prove the Laws of Sines and Cosines and be able to solve problems that involve application of these laws.

10. Demonstrate understanding of polar coordinates – including how to switch between polar and rectangular coordinates and how to draw graphs of equations that are given in polar coordinates.

11. Demonstrate understanding of the basic properties of vectors.

12. Demonstrate proficiency in solving problems that involve the application of vector principles (for example, problems involving the balancing of forces).
Grading: There will be five one-hour exams and a comprehensive two-hour final exam. The exam dates are listed in the course outline. Your solutions to each exam problem will be graded according to the following scheme:

- 20 points – if your solution is correct (including a correct conclusion) and your solution is well written. By “well-written”, I mean that I am able to easily follow your reasoning, no important details are omitted from your solution, correct notation is used, etc. Essentially, you will get 20 points if your solution is correct and I don’t have to struggle in determining that it is correct. 20 points is equivalent to a “high A”.
- 16 points – if your solution is correct (including a correct conclusion) but I have to struggle in determining that it is correct due to unclear writing, incorrect use of mathematical notation, or for whatever reason. 16 points is equivalent to a “borderline A–B”.
- 10 points – if your solution is not correct (even though your conclusion may be correct) but you have made a very good start (that is well-written and easy to follow and uses correct mathematical notation) and have provided the majority of a correct solution. Essentially, 10 points means high partial credit and is equivalent to a “mid-level C”.
- 4 points – if your solution is not correct (even though your conclusion may be correct) but at least the beginnings of a correct solution are discernible (meaning that I can tell that you have studied the relevant material and are at least able to get started on writing a solution). Essentially, 4 points means low partial credit and is equivalent to a “borderline D–F”.
- 0 points – if partial credit is not warranted. 0 points is equivalent to a “low F”.

Please note that the terms “correct solution” and “correct conclusion” (as used in the grading descriptions above) do not mean the same thing! It is absolutely essential, in writing solutions, that you provide sufficient details that show how you arrive at your conclusions. I (the reader) must be able to see what your reasoning process is. Thus it is possible, for example, to write down a correct conclusion and end up with 0 points (because I can’t tell how you arrived at your conclusion). Also, keep in mind that correct statements that you write can be “cancelled” by incorrect statements that you write. For example, if you write only statement X and statement X is a correct beginning of the solution to the problem, then you might be awarded 4 points. However, if you write statements X and Y where statement X is correct and relevant but statement Y is incorrect or contradicts statement X, then you could be given 0 points.

Your grade on each exam will be calculated by averaging your scores on each individual question and then rounding this average to the nearest tenth. For example, suppose that a certain exam contains 7 questions and your scores on these questions are 16, 20, 10, 10, 4, 16, and 0. When we average these numbers, we get approximately 10.857. Rounded to the nearest tenth, we get 10.9. Therefore your score on this exam would be 10.9 (and your letter grade for the exam would be C). Number ranges and letter grades will have the following correspondence.

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>16–20</td>
<td>A</td>
</tr>
<tr>
<td>12–15.9</td>
<td>B</td>
</tr>
<tr>
<td>8–11.9</td>
<td>C</td>
</tr>
<tr>
<td>4–7.9</td>
<td>D</td>
</tr>
<tr>
<td>0–3.9</td>
<td>F</td>
</tr>
</tbody>
</table>
Your final grade at the end of the course will be calculated according to

\[
\text{Sum of Hour Exam Scores + Final Exam Score}
\]

with the result being rounded to the nearest tenth and a final course grade being assigned as in the above table. **However,** before performing the above calculation, the **lowest** hour-exam score will be dropped and replaced with the final exam score (if the final exam score is higher than the lowest hour exam score). In summary: 1) If your final exam score is higher than your lowest hour exam score, then your lowest hour exam score will be disregarded and your final exam score will be worth 2/6 (or 33.3%) of your final grade for the course. 2) If your final exam score is lower than all of your hour exam scores, then your final exam score will be worth 1/6 (or 16.7%) of your grade for the course.

**Important Note:** There will be **no make-up exams** for any reason (legitimate or not legitimate)! Occasionally, students miss exams for legitimate reasons such as illness and automobile mishaps. If you must miss an exam for a legitimate reason, please inform me as soon as possible. If your reason for missing the exam is legitimate, then you will be excused from it and your grade on the portion of the final exam that addresses the material of the missed exam will be used as your grade for the missed exam. In order to be excused from an exam, you **must** provide written documentation from a doctor (in the case of illness) or from the police (in the case of an auto accident) that states the reason why you were not able to be at KSU **on the day of the exam.** In some cases in which a student knows ahead of time, and informs me at least one week in advance, that he or she will not be able to be present on an exam day, I allow the student to take the exam early (but not after the official exam day).

**Attendance and “House Cash!!” Days**

Class attendance is very important. Evidence shows that most students who do not attend class regularly do not make good grades. In order to encourage class attendance, I will have five “House Cash!!” days. These will be days when I will take attendance at the end of the class period. There will be one “House Cash!!” day on some day before each of the five scheduled hour exams but the particular day will not be announced. To earn house cash, you simply have to be present in class on that day. Here is the good part: House cash can be used to get a “free space” on the upcoming exam – meaning that your lowest score on any particular problem on that exam will be disregarded (not figured into the average in computing your overall score for the exam). For example, if an exam contains 8 problems and you have house cash for that exam, then your score for the exam will be computed by averaging only your 7 best answers. If you miss class on the house cash day (for whatever reason – good or bad), then you are out of luck. The only way to get house cash is to be present. Also, house cash is **NOT TRANSFERRABLE** to other students and cannot be saved to use on any exam other than the immediately upcoming exam.

**Grades of “Incomplete”:** Grades of “Incomplete” (I) are given, at the instructor’s discretion, to students who have been doing satisfactory work (at least a C average) up until the last two weeks of the semester but who, for some unavoidable reason, are unable to complete the work of the last two weeks of the semester. No decisions about grades (including grades of Incomplete) will be made until the semester (including the final exam) is finished. Occasionally, students ask me if I will give them a grade of “Incomplete”. This request is
usually made at some point before the last two weeks of the semester. I can’t answer such requests since I do not make any grading decisions until the semester is over. If I see that an "Incomplete" grade is warranted, then I will give that grade (without being asked). I very rarely assign grades of “Incomplete” because I have found that they are usually not warranted. All incomplete work must be made up (and the I grade changed to a regular grade, A, B, C, D, or F) as quickly as possible, typically before the start of the next semester.

**Academic Honesty:** No cheating of any kind will be tolerated. If you are caught cheating in this course (this includes things such as looking at hidden notes or books or looking at somebody else’s exam paper while taking an exam), your name will be placed on record in the KSU Judiciary Office. You will also be given a grade of F for the course. More severe penalties such as suspension or expulsion might also ensue.