

Kellogg Community College

Department of Engineering Technology
Applied Mathematics

INSTRUCTOR: Pat Kopf Telephone: 965-3931 ext. 2266
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COURSE TITLE: MATH 118 Applied Algebra/Trigonometry I

COURSE DESCRIPTION: Scientific notation, reviewing basic algebra, solving linear equations, basic geometry, graphing algebraic functions, introduction to trigonometry, solving right triangles, vectors, graphs of trigonometric functions, solution of oblique triangles.

PREREQUISITE: One year of high school algebra or MATH 110.

LENGTH: One semester, 64 hours of instruction, 3 hours credit.

TEXTBOOK(S): Basic Technical Mathematics, 8th edition, A. J. Washington

ADDITIONAL SUPPLIES REQUIRED: **Graphing Calculator TI-83, TI-83 Plus, TI-84, or TI-84 Plus**

ATTENDANCE POLICY: Regular attendance and participation are necessary for successful completion of the course. The instructor will take attendance every day. A student who does not attend regularly will experience considerable difficulty. While attendance will not be a major consideration in the determination of the final course grade, if your grade is border line your attendance will help.

If a student is absent from a class session, it is the student's responsibility to become fully familiar with any information presented during that session. The student is responsible for all assignments made during their absence.

If a student finds themselves in a situation where they will miss one or several consecutive classes, please let me know beforehand or call my office phone and leave a message. An EXCESSIVE ABSENCE form will be submitted after:

1. Three consecutive absences from class.
2. Four absences from class during the semester.

An ADMINISTRATIVE WITHDRAWAL will be initiated when the instructor believes it is no longer possible for the student to pass the course.

DERIVATION OF STUDENT GRADE:

Grades are based on homework/lab work, quizzes and examinations. Class participation and attendance will affect grades in marginal situations. The grading scale follows:

Percentage	Grade	Percentage	Grade
93% to 100%	A	77% to 79.9%	C+
90% to 92.9%	A-	73% to 76.9%	C
87% to 89.9%	B+	70% to 72.9%	C-
83% to 86.9%	B	67% to 69.9%	D+
80% to 82.9%	B-	63% to 66.9%	D
		60% to 62.9%	D-

There will be 6-7 unit tests throughout the semester. Each test will be worth 100 points. Quizzes may also be given on a regular basis and will vary in value from 5 to 15 points.

Laboratory assignments will be awarded points that will vary from lab to lab. They will range from 20 to 30 points. They are an important aspect in the learning process. If a student knows that they must miss a class period during which a lab exercise is being completed, please contact the instructor for makeup opportunities. All labs are due one week after the completion of the data collection portion of the lab. Late lab assignments will receive half credit.

In order to help you stay better organized, there will be a notebook kept. I prefer a 3-ring binder, but you may use a folder with pockets etc. A sample copy of an organized notebook will be available for your reference. Your notebook will be worth **100 points** and must be organized as I've outlined.

1. Keep the course syllabus and outline in front (worth 5 points)
2. Keep a section for:
 - In-class notes (worth 15 points)
 - Returned tests/quizzes (worth 15 points)
 - All homework, in order (worth 35 points)
 - All labs (worth 15 points)
 - Neatness/organization (worth 15 points)

Homework assignments are worth 1/3 of your notebook grade. To receive all the homework credit you must show your work, not just answers. Homework must also be in order and labeled by section number. Homework will not be collected on a regular basis. If you would like me to review your homework periodically or have questions, please feel free to stop in during office hours.

Weekly problem solving exercises will be assigned each day of the week we meet. Each "Logic Problem" (as I call them) will be worth 5 points. You will have the opportunity to respond to 32 problems over the course of the semester and you need to attempt to earn 80 points of the 160 points available. The logic problems must be answered by e-mail, you must include your answer to the problem and a short description of how you got to that answer. Your responses to the two problems each week are due by the following weeks first day of class meeting at 5:00 p.m.

The final exam will be worth 200 points towards your final grade. The final exam will be take-home. **All work must be shown on your final exam to receive credit.**

Note on late quizzes and tests:

1. Quizzes: Make up will be permitted only for legitimate absences. It is your responsibility to ask if there was a quiz during your absence and to schedule a make up with the instructor. Make up quizzes must be completed within one week of your return.
2. Tests: It is assumed that when a test is given during a class period that all students will be ready to take the test at that time. If you are unable to attend class due to unforeseen circumstances you must make up the test in the testing center (Lane Thomas bldg., third floor) prior to the next class period. When you have missed a test, your test is put in the testing center immediately after class. Students who have not made up the test prior to the next class period will receive their grade less 15-percentage points for each day (not class day) that they continue to postpone taking the test in the test center. Students who show a repeated pattern of missing exams in class will lose the privilege of using the testing center and will receive zeros if they are absent when the test is given.

Note: Some circumstances, such as extended illness, death in the family, will make this policy void, but they need to be discussed with the instructor.

ACADEMIC HONESTY: Anyone found cheating on a quiz or test will be given a zero for that item they cheated on and a warning will be issued. If anyone is detected cheating a second time, they will be asked to leave the course with no credit.

OFFICE HOURS: I am more than happy to make time for you if you have shown a true desire to succeed in this class. The only way I can help you do your best is if I know you are having troubles, so **please** feel free to ask questions or come in to see me. My office hours are posted on my door and can be recorded below. If these times will not work for you, please ask me to set up an appointment with you. I am more than happy to accommodate your schedule where possible.

Monday

Tuesday

Wednesday

Thursday

Friday

ADA STATEMENT: Kellogg Community College does not discriminate in the admission or treatment of students on the basis of disability. KCC is committed to compliance with the Americans With Disabilities Act and Section 504 of the Rehabilitation Act.

DISCLAIMER: Information contained in this syllabus was, to the best knowledge of the instructor, considered correct and complete when distributed for use at the beginning of the semester. However, this syllabus should not be considered a contract between Kellogg Community College and any student, nor between the instructor and any student. The instructor reserves the right, acting within the policies and procedures of Kellogg Community College, to make changes in course content or instructional techniques without notice or obligations.

GOAL STATEMENTS:

1. The learner will be able to use scientific notation for decimal point location in any problems involving multiplication, division, finding roots or integral powers, or combinations of those operations.
2. The learner will be able to find squares and indicated squares of numbers, both explicit and literal, and square roots of literal monomial expressions and of positive explicit numbers which are perfect squares. He will be able to find both principle square roots and negative square roots.
3. The learner will be able to add, subtract, multiply, and divide algebraic expressions.
4. The learner will be able to solve equations including literal equations or formulas. He will be able to analyze the given equation and follow a correct sequence of steps in obtaining the solution.
5. The learner will be able to find perimeter and area of polygons.
6. The learner will be able to find values for angles that occur when lines intersect; are parallel with a transversal crossing them or from similar polygons formed by parallel and intersecting lines.
7. The learner will be able to recognize types of triangles and use properties such as the Pythagorean theorem.
8. The learner will be able to find the circumference and area of a circle.
9. The learner will be able to calculate the area of irregular figures using the trapezoidal or Simpson's rules.
10. The learner will be able to find the volume and surface area of solid geometric figures.
11. The learner will be able to use and evaluate expressions involving functional notation.
12. The learner will be able to graphically solve any equation for real roots.
13. Given sufficient information, the learner will be able to find unknown sides and angles of right triangles through the use of the "angle-sum principal" and the Pythagorean Theorem.
14. Given the use of a calculator to find trigonometric ratios, the learner will be able to find unknown sides and angles of right triangles through the use of sine, cosine, and tangent functions.
15. The learner will solve triangles using the "Law of Sines" and the "Law of Cosines", and will find applications that use these laws and solve them.

16. The learner will be able to add vectors (find resultant vectors) and find equivalent vectors by using the parallelogram method, the polygon method and the component method.

17. The learner will be able to define a radian, convert angular measure in radians to degrees, convert angular measure in degrees to radians, and find the sine, cosine, and tangent of any angle whose measure is given in degrees or radians.

18. The learner will be able to define the cotangent, secant and cosecant functions, and by using identity relationships involving these functions and sine, cosine, and tangent functions, find the values of the cotangent, secant, and cosecant of any angle using a calculator.

19. The learner will be able to graph trigonometric functions involving sine and cosine.

PERFORMANCE OBJECTIVES: On written tests, using tables where necessary as reference material and calculator for calculations, the learner will: (Requirement: 60% correct)

1. Use scientific notation for determining decimal point location in problems involving multiplication, division, squares, square roots, cubes, cube roots, or combinations of these operations.

2. Write the indicated square and indicated principle and negative square roots of any number.

3. Square binomial expressions.

4. Solve literal equations for a specified letter.

5. Find the product of any two binomial expressions.

6. Find the perimeter and area of polygons.

7. Find the circumference and area of a circle.

8. Find the area of irregularly shaped figures.

9. Find the volume and surface area of solid geometric figures.

10. Select functions from a list of given relationships.

11. Graph any function by making a table of values and using a graphing calculator.

12. Find zeros of a function graphically.

13. Solve any equation graphically for real roots.

14. Write expressions using functional notation.

15. Evaluate $f(a)$ when $f(x)$ is given.
16. Calculate the unknown sides and angles of any triangle, given sufficient information.
17. Define sine, cosine, and tangent ratios in terms of x , y , and r for standard position angles.
18. Define sine, cosine, and tangent ratios in terms of “side opposite”, “side adjacent”, and “hypotenuse”.
19. Find any trigonometric function of a specified angle of any size.
20. Find the horizontal and vertical components of any vector.
21. Find the length and direction of any vector given its horizontal and vertical components.
22. Add two or more vectors by the parallelogram, and component method.
23. Define a radian.
24. Convert angles from radians to degrees and from degrees to radians.
25. Find the trigonometric functions of angles expressed in radians.
26. Graph any trigonometric functions of angles expressed in radians.
27. Write the equation of the sine wave given the amplitude, phase angle, and period or given the graphs.
28. Determine the amplitude, phase angle and period of a sine wave given its equation or graph.
29. Given two sine waves, state which leads or lags the other and the amount of lead or lag.
30. Determine if a specified side or angle of a given triangle can be solved for using the law of cosines or law of sines and, if possible, solve.