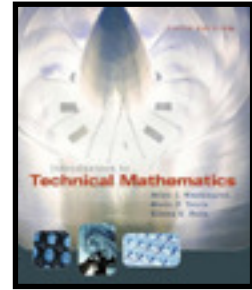


**TECM-119-Fast Forward  
Technical Mathematics 119  
Course Syllabus  
Fall 2017  
CRISP Technology Center  
Computer Lab  
(Room 124)  
Bill Broda, Instructor  
[Wbroda@kaskaskia.edu](mailto:Wbroda@kaskaskia.edu)**



## **Part 1. Instructor and Section Information**

Computer Lab – CRISP Technology Center – Room 124  
Office Hours TBA

[WBroda@kaskaskia.edu](mailto:WBroda@kaskaskia.edu)

## **Part 2. Course Information**

### Course Identification

*Prefix and Number:* TECM 119

*Course Title:* TECHNICAL MATHEMATICS

*Method of instruction:* classroom activities and online

### Catalog Description

*Prerequisite:* MATH 102 or higher placement

#### *Catalog Description:*

This course provides experience to mathematics for first year technical students. The course is designed to develop all of the mathematical skills required in various technical fields, including an understanding of the metric system and use of a calculator.

### I. Course Outline

- 1. *Chapters 1*** Basic Operations with Signed Numbers.
  - a. Definition, Addition, Subtraction, Multiplication, and Division
  - b. Powers and Roots
  - c. Order of Operations
  - d. Scientific Notation
  - e. Problem-Solving Strategies

- 2. Chapter 2** – Units of Measure
  - a. Working with Units of Measure
  - b. The Metric System
  - c. Reductions and Conversions
  - d. Approximate Numbers and Significant Digits
- 3. Chapter 3** – Introduction to Algebra
  - a. Formulas
  - b. Basic Algebraic Expressions
  - c. Addition, Subtraction, Multiplication, and Division
- 4. Chapters 4** – Simple Equations and Inequalities
  - a. Solving a Simple Equation
  - b. Simple Formulas and Literal Equations
  - c. Simple Equations and Problem-Solving Strategies
  - d. Ratio, Proportion, and Variation

NOTE: Chapter 5 is not covered in this course.

- 5. Chapters 6** – Introduction to Geometry
  - a. Basic Geometric Figures
  - b. Perimeter
  - c. Area
  - d. Volume
- 6. Chapters 7** – Simultaneous Equations (System Equations)
  - a. Graphical Solutions
  - b. Substitution Method
  - c. Addition / Subtraction Method
  - d. Determinants in Two Equations
  - e. Problem-Solving Strategies
- 7. Chapters 8** – Factoring
  - a. The Distributive Property
  - b. Factoring Trinomials
  - c. The Difference Between Two Squares
  - d. The Sum and Difference of Cubes
- 8. Chapter 9** – Algebraic Fractions
  - a. Equivalent Algebraic Fractions
  - b. Multiplication and Division of Algebraic Equations
  - c. The Lowest Common Denominator
  - d. Addition and Subtraction of Algebraic Equations
  - e. Solving Fractional Equations
- 9. Chapter 10** – Exponents, Roots, and Radicals
  - a. Integral & Fractional Exponents
  - b. Imaginary Roots
  - c. Simplifying Radicals
  - d. Operations and Working Radical Equations

**10. Chapter 11** – The Quadratic Equation

- a. Solving quadratic equations by:  
    factoring,  
    completing the square  
    using the quadratic formula
- b. Graphing the quadratic function

NOTE: Chapter 12 is not covered in this course.

**11. Chapters 13** – Geometry and Right Triangle Trigonometry

- a. Angles and their measure
- b. Other geometric figures
- c. Right triangles and the Pythagorean Theorem
- d. Similar Triangles
- e. The Trigonometric Ratios
- f. Values of the Trigonometric Ratios
- g. Right Triangle Applications

**12. Chapters 14** – Oblique Triangles and Vectors

- a. Trigonometric Functions of Any Angle
- b. The Law of Sines
- c. The Law of Cosines

NOTE: Only the first three sections of Chapter 14 are covered in this course.

**13. Micrometers and Inside/Outside Calipers**

- a. Reading the English Micrometer
- b. Reading the Metric Micrometer
- c. Reading the English/Metric Micrometers with a Vernier Scale
- d. Reading the inside/outside caliper

NOTE: All assignments and reading material for this set of topics will be found in BLACKBOARD.

II. Expected Outcomes for Student Learning

1. Perform basic operations with whole numbers.
2. Perform basic operations with fractions.
3. Perform basic operations with percents and decimals.
4. Add, subtract, multiply and divide signed numbers.
5. Use powers of 10 and scientific notation.
6. Compute and compare measurements within the metric system.
7. Convert from metric to English and English to metric.
8. Perform simple polynomial operations. (Add and subtract to simplify expressions)
9. Solve simple polynomial equations and apply equations to word problems.

10. Use and evaluate formulas.
11. Use ratios and proportions to solve word problems and equations.
12. Calculate areas and volumes of various geometric shapes.
13. Calculate angle measures from given information.  
(i.e. parallel line or triangles)
14. Solve problems using the Pythagorean Theorem.
15. Solve basic right triangle trigonometry problems.
- \*16. Graph linear equations.
- \*17. Solve systems of equations. (Basic 2 equations  
and 2 unknowns)
- \*18. Solve quadratic equations using the  
quadratic formula.

\* If Time Permits

### **Part 3. Classroom Information**

#### I. Books, Supplies, and Supplementary Materials

##### 1. *Textbooks/Reading list*

###### a. *Not Required:*

A printed textbook associated with his web-enhances course is NOT required. You will purchase access to the required web-based course from the bookstore.

###### b. *Required:*

You will use an online course management system offered by Pearson Education called Course Compass (more popularly known as MyMathLab). To register in Course Compass (i.e. MyMathLab) you will need the following ID number:

**broda67131**

###### c. *Supplementary materials:*

*As assigned during the course, the student will be required to research topics online and to BlackBoard-based activities*

###### d. *Basic Calculator* with TRIG FUNCTIONS

(NOTE: You may use a calculator downloaded from the internet.)

e. *Additional Assistance:*

- i. Success Center. Additional assistance in the form of tutoring is available in the Success Center on the main campus. Walk-Ins are welcome, but scheduling an appointment guarantees you a specific time and tutor. Success Center Main Desk Phone No. 545-3155.
- ii. Recommended Supplemental WEB Sites. The following web sites will be extremely helpful with fractions, decimals, ratios, percents, metric conversion, and geometry. I highly recommend you visit and try these sites out. It is recommended that you explore the following web sites so you will know what is available and where to find what you need help with. You can also find your own web sites to meet your own needs by doing a search on a search engine like [Google](#) of a particular math topic of interest.
  - [Khan Academy](http://www.khanacademy.org/) (<http://www.khanacademy.org/>)  
This site contains a large number of videos which should be helpful for most and math topic in this course.
  - [Coolmath.com](http://coolmath.com/prealgebra/index.html) ([coolmath.com/prealgebra/index.html](http://coolmath.com/prealgebra/index.html))  
This site will be useful when you get to fractions in chapters 2 and 3 in the text. This site would also be useful for review before the midterm exam.
  - [Purplemath.com](http://www.purplemath.com/modules/index.htm) (<http://www.purplemath.com/modules/index.htm>)  
Scroll down to preliminary topics to find help with decimals, finding the LCM and GCF, factoring numbers, and fractions.
  - [Amby.com](http://amby.com/educate/math/) (<http://amby.com/educate/math/>)  
This site provides explanations and practice problems on order of operation, fractions, finding area and perimeter, and setting up and solving word problems

II. Classroom Policies and Procedures

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a. *College Statement about grades of 'F' and withdrawal from class.*

A student who does not withdraw from a course may receive a grade of 'F', depending on course progress or course attendance, which will become a part of the student's permanent record. The withdrawal date will be posted on the College's website and all over campus once the semester begins. Inquiries concerning withdrawals should be referred to the Manager of Records and Registration (545-3041).

NOTE: You are responsible for withdrawing from a class if this is your intention. Do *NOT* expect a withdrawal form to be submitted by the instructor

b. *Method of Evaluating Students*

For each chapter you must complete all of your homework problems found in *Course Compass*. There will be a chapter test for each chapter. You have the opportunity to choose your grade for the course by submitting a *Grade Contract*.

If you choose to make an *A*, you must complete all tests as well as the final exam with a grade of 90% or better.

If you choose to make a *B*, you must complete all tests as well as the final exam with a grade of 80% or better.

Otherwise you must complete all tests as well as the final exam with a grade of 70% or better.

You may retake a different version of any test you choose in order to improve your grade. You will not be allowed to move forward until you score at the level of your *Grade Contract* or 70% if you do not submit a *Grade Contract*. You may proceed at the pace you choose with this course, however it is strongly recommended that you not fall behind the suggested *Master Schedule* for the course. You are encouraged to work together as you learn the course material and do your homework problems. **You must achieve a minimum score of 50% on each homework assignments BEFORE you may take the chapter test.**

There will always be an instructor as well as a tutor in the classroom to help you. You are required to spend 5 hours per week in the classroom. If you fall behind the *Master Schedule* you will be expected to spend additional time in the classroom or in the *Success Center* until you get caught up.

You must turn in a completed ***Practice Test*** (including all work) for a chapter before you will be allowed to take the Chapter Test. This applies to the *Mid-Term*, and *Final Exam* as well.

#### ALL CHAPTER TESTS WILL BE TAKEN IN CLASS

1. The following GRADING SCALE will be used:

90% – 100% = A

80% – 89% = B

70% – 79% = C

60% – 69% = D

Below 60% = F

## 2. Course Grade Components

- a. The Final Exam will be administered according to the College's published final exam schedule and it will count 20% of your total grade.
- b. The average of the Chapter Tests will count 65% of your total grade.  
*NOTE: There is NO mid-term exam for this course.*
- c. The assigned homework will count as 15% of your total grade.
- d. At the discretion of the instructor, there may also be several quizzes which may count toward your course grade.

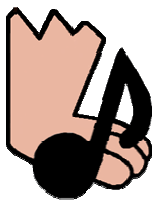
## 3. How the course grade will be determined

- a. Although you may find some of the Chapter tests easier than others, **ALL CHAPTER GRADES WILL BE BASED ON 100%**. At the end of the semester all chapter scores will be averaged. This average score will count as 65% of your course grade.
  - b. The on-line homework will be graded by chapter and the maximum points awarded for a given set of chapter homework is 15 points. At the end of the course, these chapter homework scores will be averaged and this average will count as 15% of your course grade.
  - c. The Final Exam will be based on 100% and your score on the final exam will count as 20% of your course grade.
- d. *Cheating/Plagiarism Policy*

Any student caught cheating will be receive a course grade of F.

## 4 Contacting the Course Instructor

Communicating with the instructor should always be attempted by means of the e-mail system provided by KC Blackboard for this course. Only if this system fails and the need is immediate should a student utilize the e-mail address or telephone number listed at the top of the syllabus.



Occasionally, KC Blackboard becomes temporarily inoperable. If you wish to work on course material during these times, try keying in the following address:

<http://kconline.kaskaskia.edu/bbroda>

If you cannot access MyMathLab through KC's website, try keying in the following address:

<https://www.pearsonmylabandmastering.com/northamerica/mymathlab>