



**Basic Algebra and Trigonometry
MATH 106
EV Classroom - Blended
Course Syllabus**

Credit Hours:	3 Credits
Academic Term:	Term 2300: 23 March 2015 – 24 May 2015
Meetings:	Thu 1800-2130 26 Mar 2, 9, 16, 23, 30 Apr 7, 21 May
Location:	Katterbach – Host, Geilenkirchen, Incirlik - Remotes
Instructor:	Dr. R. Kuseski
Office Hours:	By appointment, Central European Time
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Course Description:

The course includes a study of the basic laws of numbers, fractions, exponents, complex numbers, and radicals, as well as an understanding of a variety of expressions and equations including; equalities, inequalities, polynomials, and quadratics. The elements of trigonometry will also be reviewed. Contact hours per week (4:45). **Prerequisite(s):** Qualifying score on the ERAU Mathematics Placement Examination or GNED 103.

Course Goals:

This course is designed to provide the fundamentals of Algebra and Trigonometry necessary for advanced college mathematics courses.

Learning Outcomes:

Alignment with Worldwide College of Arts & Sciences general education program outcomes is indicated in parentheses. Upon completion of the course, students will be able to do the following:

1. Identify, add, subtract, multiply, and divide different types of real numbers. (PO 7)
2. Identify and combine common terms in expression and equations; rearrange formulas. (PO 7)
3. Solve linear equations and problems in one unknown, and solve formulas for a specific unknown. (PO 7)
4. Solve and graph inequalities and solve problems involving inequalities. (PO 7)
5. Solve linear polynomials with one unknown (equalities, inequalities, absolute values). (PO 7)
6. Use integers as exponents in multiplication and division as well as raising a power to a power; and use of scientific notation. (PO 7)
7. Identify, add, subtract, multiply and divide polynomial expressions. (PO 7)
8. Reduce polynomials by identifying common factors and various factoring methods, special products, grouping and trial and error methods. (PO 7)
9. Simplify, add, subtract, multiply and divide rational expressions; understand the LCD. (PO 7)
10. Identify and solve rational expressions and reduce radical expressions. (PO 7)
11. Graph linear equations using tables and intercept methods. (PO 7)
12. Graph solutions to linear polynomial equations (equalities and inequalities). (PO 7)
13. Simplify rational expressions and expressions involving rational exponents. (PO 7)
14. Simplify, add, subtract, multiply, divide radical expressions (and rationalize denominators). (PO 7)
15. Solve equations containing a radical term. (PO 7)
16. Solve quadratic equations by use of the Principle of Zero Products and the Quadratic Formula, as well as solve problems involving quadratic equations. (PO 7)
17. Add, subtract, multiply and divide complex numbers. (PO 7)
18. Solve systems of equations containing two unknowns by substitution or elimination. (PO 7)
19. Review concepts of geometry including properties of circles, triangles and intersecting lines. (PO 7)
20. Solve problems involving right triangles as well as finding decimal approximations for trigonometric functions of any acute angle by using a calculator. (PO 7)

Required Course Materials:

Bittinger, M., & Beecher, J. (2008). *Basic algebra & trigonometry* and MyMathLab (ERAU Custom Edition). Boston: Pearson/Addison Wesley. ISBN: 978-0558260842

MyMathLab is a course requirement. All the HW and Tests are offered within this program. There are supplemental videos tied to many of the HW questions. There are videos to introduce each Chapter and videos that demonstrate some of the Textbook Examples.

There is also an online copy of the textbook that you can refer to should you prefer to use it as a supplemental or primary reading source. Because it resides in the browser, it is readable from a multitude of platforms. While it offers advantages, some strongly prefer the smell of paper and ink and learn best with a book to thumb through.

Calculator Requirement:

Students are required to have a calculator, though *most* assigned work can (and should) be done without one. Graphing calculators are *not necessary*. However, a basic scientific calculator that offers the trigonometric functions of SIN, COS, and TAN is required. The ERAU Worldwide Mathematic Department uses the Microsoft Mathematics 4.0 online calculator. Download instructions are in the Resources page. The TI-30X-II (Solar or Battery) , which typically goes for about \$15, and similar models from Casio for slightly less, allow data entry in natural order on your screen. Whatever calculator you decide to use, be sure that you know how to use it as this will alleviate a lot of mistakes and frustration.

Suggested Supplemental Materials:

Software Downloads

ERAU Worldwide provides MathType and Graphmatica software in the **Resources** page of this course. The software helps you write mathematical symbols on the Discussion Board and in other documents for this course. Use of these programs are optional and up to the individual student. Note that Graphmatica 2.0 is **Shareware** and as such you are bound by its terms—a trial is free, but once you decide it's useful, you pay for the lifetime license (\$25, as it has been since the last millennium). ERAU has no formal relationship with the owners of Graphmatica.

Recommended Mathematics Web Sites

S.O.S Mathematics - <http://www.sosomath.com/>

Ask Dr. Math - <http://mathforum.org/dr.math/>

Math2.org - <http://www.math2.org>

www.kahnacademy.org

Grading:

MML Quizzes	14%
MML Midterm Exam	14%
MML Final Exam	14%
MyMathLab Homework	28%
Participation/Blended Learning Challenge Problems	30%
Total	100%

Final Average X	Letter Grade
90 or better	A (Superior)
$80 \leq X < 90$	B (Above Average)
$70 \leq X < 80$	C (Average)
$60 \leq X < 70$	D (Below Average)
Below 60	F (Failure)

Library:

The Jack R. Hunt Library, located on the Daytona Beach Campus, is the primary library for all Worldwide Campus students.

Web: <http://library.erau.edu>

Phone: (800) 678-9428 (ext. 6947) or (386) 226-7656
(Voicemail is available after hours)

Hours: Monday - Friday, 8:00 a.m. - 5:00 p.m. EST

Email: http://library@erau.edu

Items special to Blended Delivery

Because our class is designated a Blended format, the reduced EagleVision presence of 3 hours and 20 minutes is supplemented with about an hour and twenty minutes' worth each week of compensatory time, perhaps in Blackboard small groups (you need not all be "there" at the same time, but it's desirable and beneficial to try to coordinate schedules), or perhaps a normal Discussion Board, separate from class time, with peer interaction in mind. Because our class meets on Day 4 of each Week, those activities will mainly be structured as "Preflights", designed to prepare you for the meat of the material to be presented on Thursdays, during which questions on the homework will be addressed and lots of skills practice where needed. Blended Delivery assignments will include group participation on Challenge Problems during 7 of the 9 modules (see below).

Consider this expectation carefully. It is VERY difficult to earn an "A" in this class without engaging (Participating with) your peers in the group assignments. If this troubles you, you may want to consider taking an ONLINE or EagleVision HOME (non-Blended) format instead.

MyMathLab (MML) Homework Assignments

Your instructor will post the ID code for the course in the Online Office, located in the Discussion Board.

Modules 1 - 4 and 6 - 8 have homework assignments located in the MML interface of this course. While working on the homework problems, MML provides you with systematic instructions, examples of similar problems, access to the online textbook, and other multimedia resources. You have an unlimited number of attempts to complete each homework assignment. In Mathematics, practice is the best method of learning.

You must attain a score of at least 70% on each assigned homework in order to take the MML quiz at the end of each module. Homework assignments are required and contribute 28% to your final grade.

MML Quizzes

There are seven MML quizzes, one at the end of each learning module. The quizzes cover the material you have learned in the current module's materials, chapter readings, and homework assignments. Depending on the number of questions on the quiz, you have 45 to 60 minutes to complete each quiz. There are only two attempts allowed for each quiz.

MML will give you immediate feedback after taking each quiz. A one-time review is allowed only immediately after submitting the final quiz attempt. The MML quizzes contribute 14% to your final grade.

Exams

These will not be administered during class, and so on those weeks, there would not be any small group activities. They will be taken Weeks 5 and 9, respectively. In the Eaglevision class or Lecture class during those weeks new material for the week will be introduced. The class time, plus the time allotted for the tests, will sum to 4 hours and 45 minutes, the normal contact time per week. There is a midterm exam in week 5 and a final exam in week 9 of this course. Each exam has 20 questions with a time limit of two hours. The midterm covers material covered in modules 1 through 4. The final exam primarily covers modules 6 through 8, though basic material covered in the first half of this course will be included out of necessity.

Each exam is worth 14% of your final grade.

Participation/Challenge Problems

This course includes weekly activities, each of which may have grade points associated with them. Unless prior arrangements have been made with the instructor, students are expected to participate each week, according to the course schedule. This is especially important with regards to discussion activities. Weekly discussions typically include both an initial posting and one or more substantive replies.

Each module with the exception of the exam modules includes a challenge problem. The challenge problems will be solved by designated groups of 4-6 students in the class in the appropriate Discussion Board forum. Groups will change from week to week. Participation is an essential part of this course. Everyone is expected to help solve their group challenge problem and constructively respond, question, or debate the answer to at least one other group's challenge problem each week. You are not restricted on the amount of interaction in this course; it is highly encouraged. Detailed Challenge Problem instructions can be viewed in Module 1 and Course Specific Resources.

Your instructor will post and discuss the final solutions to the challenge problems on the first day of the following week, and post your grade for the activity in the grade book; solution attempts posted afterwards (for any reason) will not receive credit. All students must post a solution attempt for each challenge problem in their own words; cutting/pasting from someone else's work will not be tolerated. Each instructor-solution will include the complete method used to obtain the correct solution. Both of these Discussion Board activities—the weekly challenge problems and your participation—contribute a total 30% to your grade.

Course Policies:

Embry-Riddle is committed to maintaining and upholding intellectual integrity. All students, faculty, and staff have obligations to prevent violations of academic integrity and take corrective action when they occur. The adjudication process will include the sanction imposed on students who commit the following academic violations, which may include a failing grade on the assignment, a failing grade for the course, suspension, or dismissal from the University:

1. **Plagiarism:** Presenting as one's own the ideas, words, or products of another. Plagiarism includes use of any source to complete academic assignments without proper acknowledgement of the source. All papers submitted for grading in this course will be submitted to safeassign.com - <http://www.safeassign.com/> where the text of the paper is compared against information contained in the safeassign.com database. Papers submitted will be included in the safeassign.com database and become source documents for the purpose of detecting plagiarism.
2. **Cheating:** A broad term that includes the following:
 - a. Giving or receiving help from unauthorized persons or materials during examinations.
 - b. The unauthorized communication of examination questions prior to, during, or following administration of the examination.
 - c. Collaboration on examinations or assignments expected to be individual work.
 - d. Fraud and deceit, that include knowingly furnishing false or misleading information or failing to furnish appropriate information when requested, such as when applying for admission to the University.

APA Format

Go to <http://www.apastyle.org/manual/index.aspx> for the *American Psychological Association Publication Manual*. Since you will be giving citations in support of Discussion Board submissions, you want to become knowledgeable in the APA style.

Note: The Instructor reserves the right to use any form of digital method for checking plagiarism. Several electronic systems are available and other methods may be used at the Instructor's discretion. This course uses SafeAssign, an anti-plagiarism tool that compares your writing with a database of millions of other written works and checks for originality versus plagiarized papers (even "**patchwriting**" or "patch-quilt" plagiarism).

Late work should be the exception and not the rule and may be downgraded at the discretion of the Instructor, if accepted at all. Work that is not submitted by published deadlines, without instructor coordination, is subject to the loss of all points for that activity. Extensions may be granted for extenuating circumstances at the discretion of the Instructor and only for the length of time the Instructor deems appropriate. The most important element of success in any course is to communicate with your Instructor throughout the term.

Disability and Special Needs:

ERAU is committed to the success of all students. It is a University policy to provide reasonable accommodations to students with disabilities who qualify for services. If you would like to request accommodations due to a physical, mental, or learning disability, please contact the Worldwide Campus Disability Support Service Office at (888) 292-5727 or via email wwdss@erau.edu or worldwide.disability.support.services@erau.edu. Your instructor does NOT have the authority to grant accommodations without direction from the DS Office.

Course Schedule:

Week	Meeting Date	Topics	L/O	Activities
1 23-29 March	26 Mar	Introduction, Fractions; Exponents; Roots; Real Numbers; Radical Expressions	1, 2, 14	<ul style="list-style-type: none">• Install Software and Register for MyMathLab• Review the Course Syllabus• Text Readings: Chapter 1,2, 7, 14 Sections: 1.7 through 1.9 2.1 through 2.4 7.2 through 7.8 14.1 and 14.2• Homework: MML HW Mod 1• Challenge Problem #1• MyMathLab Module 1 Quiz
2 30 Mar – 5 Apr	2 Apr	Algebraic Expressions; Solving Linear Equations, Inequalities, and Absolute Values	1-5	<ul style="list-style-type: none">• Textbook Readings: Chapter 8 Sections: 8.1 through 8.8 & Appendix H• Homework: MML HW Mod 2• Challenge Problem #2• MyMathLab Module 2 Quiz
3 6-12 April	9 April	Graphing Linear Equations and Inequalities; Solving Systems of Equations	1-5, 7, 11, 12, 18	<ul style="list-style-type: none">• Textbook Readings: Chapter: 9 and 13 Sections: 9.1 through 9.7 & 13.1 through 13.4 Appendix G• Homework: MML Mod 3• Challenge Problem #3• MyMathLab Module 3 Quiz
4 13-19 April	16 Apr	Addition, Subtraction, and Multiplication of	6, 7	<ul style="list-style-type: none">• Textbook Readings: Chapter: 10 Sections: 10.1 through 10.5• Homework: MML Mod 4

		Polynomials		<ul style="list-style-type: none"> • Challenge Problem #4 • MyMathLab Module 4 Quiz
5 20-26 April	23 Apr	Geometry: Circles, Triangles, and Angular Relationships; Midterm Exam	1-7, 11, 12, 18, 19	<ul style="list-style-type: none"> • Textbook Readings: Chapter: 6 Sections: 6.4, 6.6, 6.7, and 6.8 • MyMathLab Midterm Exam
6 27 Apr – 3 May	30 Apr	Polynomial Expressions; Solving Polynomial Equations	8, 16	<ul style="list-style-type: none"> • Textbook Readings: Chapter: 11 Sections: 11.1 through 11.8 • Homework: MML Mod 6 • Challenge Problem #5 • MyMathLab Module 6 Quiz
7 4 - 10 May	7 May	Combining and Simplifying Rational Expressions; Lowest Common Denominators; Solving Rational Equations	9,10, 13	<ul style="list-style-type: none"> • Textbook Readings: Chapter:12 Sections: 12.1 through 12.6 & Appendix J • Homework: MML Mod 7 • Challenge Problem #6 • MyMathLab Module 7 Quiz
8 11 - 17 May	14 May	Solving Quadratic Equations; Complex Numbers; Elements of Trigonometry	16, 17, 19, 20	<ul style="list-style-type: none"> • Textbook Readings: Chapter: 15 Sections: 15.1 through 15.3 Appendix R Appendix S • Homework: MML Mod 8 • Challenge Problem #7 • MyMathLab Module 8 Quiz
9 18 - 24 May	No class meeting	Solving Radical Equations; Final Exam	1 - 20	<ul style="list-style-type: none"> • Textbook Readings: Chapter: 14 Section: 14.5 • MyMathLab Final Exam

Submitted by: Dr. R. Kuseski

Approved by: _____