

MAT 141.AH1: AMERICAN HONORS PRECALCULUS

WINTER 2016 COURSE SYLLABUS

PROFESSOR: Steve Tuckey

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OFFICE: 142 [James McDivitt \(JM\) Hall](#)

SCHEDULE: <http://bit.ly/sftschedul>

ONLINE: www.mymathlab.com; MML Course ID: **tuckey59556**

CLASS MEETINGS: Tuesdays & Thursdays, 1:30 to 3:50 PM, in [JM](#) 251
19 January to 5 May, 2016

COURSE INFORMATION:

COURSE DESCRIPTION: (FROM [JACKSON COLLEGE COURSE CATALOG](#))

Major emphasis is on the concept of functions. Study polynomial, rational, exponential, logarithmic, trigonometric and inverse trigonometric functions, their properties, graphs, and related equations and applications. Additional topics include systems of equations, matrices, and conic sections.

PREREQUISITE:

An earned grade of ≥ 2.0 in JC's MAT 139, course placement, or instructor approval. **Note:** The Math department strongly recommends that course prerequisites not be more than two years old.

REQUIRED MATERIALS:

- ✓ **MyMathLab Student Access Kit:** Purchase it from the bookstore *or online*.
 - Online homework and access to course texts/materials require MML (and Internet) access.
- ✓ **Graphing Calculator:** TI-84 Plus models only (*no others supported or allowed on exams*)
- ✓ **Other:** Large 3-ring binder, large eraser, **pencils**
- ✓ **(OPTIONAL) Print Copy of the Textbook:** *Precalculus: Graphs and Models* (5th Edition), by Bittinger, Beecher, Ellenboogen, & Penna (ISBN-10: 0321783964)
- ✓ *Other materials supplied by the instructor*

COURSE OBJECTIVES & DEGREE OUTCOMES:

MAT 141 HONORS OBJECTIVES:

In addition to the core course objectives, all students in the Honors section of MAT 133 will be able to:

1. Communicate deeper understanding of the nature of mathematical reasoning, as per *The Glass Wall*
2. Work collaboratively with instructor and classmates to create valuable, mathematical service experiences to benefit the community
3. Engage in community service, making use of the concepts and ideas learned in the course reading

MAT 141 CORE COURSE OBJECTIVES:

Upon completion of this course, a student should be able to:

1. Simplify polynomial, radical, and rational expressions, and algebraic expressions involving radicals, integer exponents, rational exponents, trigonometric functions, and matrices using appropriate algebraic skills, and logarithmic processes.
2. Use appropriate algebraic processes to solve:
 - a. linear, absolute value, quadratic, radical, rational, exponential, and logarithmic equations.
 - b. linear, absolute value, polynomial, and rational inequalities.
 - c. linear and non-linear systems of equations.
 - d. trigonometric and inverse trigonometric equations.
3. Manipulate and identify functions graphically, symbolically, and numerically.
4. Solve application problems involving many different subject areas using algebraic processes, counting technologies, and the binomial theorem.
5. Apply fundamentals of right triangle trigonometry and solve applications problems.
6. Use appropriate technology (i.e., graphing calculator) to enhance the understanding of the previously stated objectives.
7. Have an awareness of the historical background of topics covered in the course.

MAT 141 ASSOCIATE DEGREE OUTCOMES: (DETAILS ON [JACKSON COLLEGE ACADEMIC DEANS WEB PAGE](#))

ADO 3. Demonstrate computational skills and mathematical reasoning

- Mathematical Concepts and Tools:
 - Demonstrates a basic knowledge of the structure of the complex number system.
 - Demonstrates algebraic skills using polynomial, rational, radical, exponential, logarithmic, and trigonometric expressions and equations.
 - Applies properties of numbers and laws of exponents.
 - Displays “algebra sense,” avoiding common mathematical misconceptions.
- Language of Mathematics:
 - Demonstrates fluency manipulating and communicating with mathematical symbols and terminology.
 - Uses symbolical, visual, numerical, and verbal representations to analyze information.
- Problem-Solving and Mathematical Modeling:
 - Demonstrates logical reasoning.
 - Carefully documents process used to reach conclusion.
 - Estimates and checks mathematical results for reasonableness.
 - Acquires and applies a broad range of mathematical skills and concepts as well as technology to facilitate efforts to visualize, interpret, and solve mathematical problems.
 - Uses graphic calculator and/or computer algebra systems to support mathematical reasoning and problem solving.

ADO 7. Critical thinking

- Problem Solving:
 - Incorporates new knowledge with old.
 - Converts complex concepts into useful personal language.
 - Solves new problems in new contexts.

COURSE REQUIREMENTS:

EXAMS:

Examinations are the primary performances of student understanding; they allow students to demonstrate mastery of the skills and concepts from the homework and lectures. Special requirements and allowances (e.g., student-prepared notes sheets) will depend upon the particular topics and will be announced and discussed in class. The final exam is cumulative for the entire course. **NOTE:** *You will sit for some examinations in the Testing Lab in 118 WA outside of normal class time (<http://www.jccmi.edu/library/testinglab.htm>).*

PROJECTS:

There will be two, mandatory course projects that are designed to improve students' mathematical and technological skills and connect course concepts with applications. These will be discussed in class, but the majority of work required to complete them will take place *outside of regular class time*.

The **Honors Project** is a semester-long, required component of this course, involving supplied reading, out-of-class experiences, and writing assignments. *Failure to complete the Honors Project will result in a failing grade for the course.*

IN-CLASS WORK, QUIZZES, ETC.:

Typically, there will be a quiz or activity in every class session (often submitted for credit). These may be individual or group, and with or without notes. *They may not be made up*, so those expecting to be absent must arrange for their documents to be submitted before class (e.g., email scanned copies, drop off documents to Steve's office, etc.).

HOMEWORK:

The single best way to **learn** math is to **do** math. This is where homework fits into the process, as it is the regular practice that fosters learning of skills and concepts. There will be three types of homework in this course:

1. *Suggested* homework associated with each section of material covered, intended as practice (neither collected nor graded, but hopefully discussed).
2. *Graded* (with partial credit) homework, often in the form of brief, "Checking In" assignments after each section, consisting of similar textbook-sourced and instructor-designed exercises.
3. Online homework, using the **MyMathLab** homework system (www.mymathlab.com). All MML homework assignments require out-of-class time on a computer with Internet access, and due dates will be announced in class and posted online.
 - There are many helpful tools available through MML (e.g., videos, step-by-step instruction), if you have trouble with any particular problems or sections.
 - Most importantly, **you have an unlimited number of tries to complete the homework before the due date**. Therefore, persistence and patience will earn you full credit.

Since homework is all about practice and learning, **"make explicit all work and reasoning" is the default requirement** in this course. You will receive no credit for solutions that appear to be copied from a solutions manual or online solution generator (e.g., Wolfram Alpha or Symbolab).

NOTE: **Late homework will not be accepted**, so you must make arrangements for submitting your work by class time if absence is unavoidable (e.g., send photos of pages, drop things off).

COURSE POLICIES:

ACADEMIC HONESTY POLICY:

You are *encouraged* to talk to each other, but **all your submitted work must be your own**. In other words, “group-work” is a great way to learn material, but anything you submit for a grade must be done by you - reflecting your own thought processes, not those of someone else. If I suspect you of academic dishonesty, I will follow JC's Academic Honesty Policy and take appropriate action up to and including assigning a **failing grade** for the paper, project, report, exam, or the course itself (as deemed appropriate).

ABSENCE POLICY:

Students are expected to attend all class meetings, arriving on time, and staying until the end. **In-class assignments may not be made up, therefore attendance is vital**. The student is responsible for obtaining any missed materials from other students; that is to say, *office hours are not a replacement for class time*. Moreover, **assignments and exams may not be made up**.

INCOMPLETE GRADE POLICY:

A student may request an incomplete from the instructor, who will follow the JC Incomplete Policy. An incomplete may be granted only if the student can provide documentation that his or her work up to that point is sufficient in quality, but lacking in quantity, due to circumstances beyond the student's control. Furthermore, a written plan for making up the missing work within one semester must be completed by the student. Final determination of whether an incomplete will be given is the instructor's decision. **Note:** An “Incomplete” grade is not a way to avoid a *failing* one.

EXTRA CREDIT:

There will be no opportunities for extra credit. Your grade calculation is based solely on your performance on course requirements listed above.

GRADING POLICY AND SCALE:

A 2.0 or "C" is a passing grade. Only courses with passing grades count toward graduation. Other colleges transfer in only courses with passing grades. Many financial aid sources, including most employers, require passing grades. Additionally, earning less than a 2.0 in a class results in being unable to participate in the next level of courses in a discipline that requires Math 141 as a prerequisite (e.g., calculus).

<u>Grading Scale:</u>	
90 -100%	4.0
85 - 89%	3.5
80 - 84%	3.0
75 - 79%	2.5
70 - 74%	2.0
65 - 69%	1.5
60 - 64%	1.0
55 - 59%	0.5
0 - 54%	0.0

<u>Grade Calculation:</u>
In-Class Work, Activities, Quizzes: 15%
Online (MML) Homework: 10%
Course Projects: 10%
Honors Project: 10%
Mid-Term Examinations: 35%
Cumulative Final Examination: 20%

ADDITIONAL INFORMATION:

CLASSROOM EXPECTATIONS:

The following are expectations that we can all share.

We are each responsible for our work, our learning, and our behavior in class.

This course will require consistent attendance and effort on your part. Mathematics is a subject that requires regular, sustained effort to understand and master.

We are all respectful of everyone in the class (*including ourselves*).

Please silence (and put away) mobile devices, refrain from using any tobacco products, and come prepared (and on time) to ask and answer questions, and work with others. Eliminating distractions from the classroom is one of the best ways to ensure focused, productive learning takes place.

We are patient and persistent, even in the face of frustration (*with others and ourselves*).

It is completely understandable *and expected* for students to be 'stumped' by problems at first.

What separates successful students from unsuccessful students is almost entirely their willingness to be patient and persistent with the mathematics.

We will communicate with each other promptly, especially in regards to problems or concerns.

Regular, direct communication solves more problems than it causes. Please do not hesitate to contact me for any reason, and I will do the same.

WHERE TO GET HELP:

At this level of mathematical sophistication, your fellow students and I are your best, most immediate resources for learning. Even so, there are *many* other sources to consider and investigate. Be creative, be resourceful, and *share what you find* -- we're all in this together!

I strongly suggest you start up a regular study group as soon as you are able with some of your classmates. At the very least, write down names and contact information for your peers and call on each other when needed. For more information on starting and maintaining a study group, check out the following link: <http://bit.ly/math-study-group>

Other sources of help:

- *Office Hours:* Meet with Steve before/after class or by appointment (perhaps online).
- *Jackson College's Center for Student Success (CSS):* Free tutoring in *Federer Room C* of the Potter Center is available most weekdays (<http://www.jccmi.edu/Success/Tutor/>). Remember, finding tutoring for upper-level mathematics often takes time and patience.
- *Online Help & Computation Sites:* There are several online sources for help, *some* of which are high-quality and easy to use, including: www.Calculus-Help.com, www.wolframalpha.com, www.mathway.com, & www.symbolab.com. I recommend these for *checking* your homework.

IMPORTANT DATES:

Check the JC academic calendar (http://www.jccmi.edu/academics/academic_calendar.htm) for important dates (e.g., holidays, last day to drop, last day for refunds, last day to withdraw).

TENTATIVE COURSE OUTLINE:

The following is a brief (and *tentative*) list of the textbook sections covered in the course.

- Chapter R: Sections R1 – R7
- Chapter 1: Sections 1.1 – 1.6
- Chapter 2: Sections 2.1 – 2.6
- Chapter 3: Sections 3.1 – 3.5
- Chapter 4: Sections 4.1 – 4.3, 4.5, 4.6
- Chapter 5: Sections 5.1 – 5.6
- Chapter 6: Sections 6.1 – 6.6
- Chapter 7: Sections 7.1 – 7.5
- Chapter 8: Sections 8.1, 8.2, 8.4
- Chapter 9: Sections 9.1 – 9.3
- Chapter 10: Sections 10.1 – 10.3, 10.7

NOTE: This outline is **tentative** and subject to change due to a variety of factors. To know exactly what material was covered on which day, you must attend class or contact others who did.

PLANNING AND STUDYING:

This class will move VERY fast. Expect **SUBSTANTIAL** amounts of homework; you must plan on ***no less than 3 hours*** of outside-class work time *for every class session* (this is a 5-credit course!). In addition, projects will require more time over longer periods, and involve working with others.

The single most frequent piece of advice given by successful students to future students of this class is: ***“Don’t fall behind -- do homework every day.”***

Name:	Contact Info:	Availability: