Summer C 2016
UF Online
MAC 1140
Syllabus

Contents

1. INTRODUCTION

1a.. Course Content. College algebra, functions, coordinate geometry, and exponential and logarithmic functions. This course is designed as a review of algebra to prepare the student for business calculus. If you plan to take engineering calculus, then after completing this course you will need to take MAC 1114, Trigonometry. Or instead of taking MAC 1140 and then MAC 1114, you could take MAC 1147, Precalculus Algebra/Trig, which is a very fast paced course.

A minimum grade of C (not C-) in MAC 1140 satisfies three hours of the general education requirement and also satisfies the pure math portion of the state Writing/Math requirement. Note: A student can receive at most four credits for taking both MAC 1147, and MAC 1140 or MAC 1114, and at most five credit hours for taking MAC 1147, MAC 1140, and MAC 1114. Students who successfully complete this course (C or better) can advance directly to UFs MAC 2233, Survey of Calculus 1 (for business majors).

Students taking this course for general education credit or the pure math portion of the Writing/Math requirement, and who do not need precalculus for their major or as preparation for calculus, might consider taking MGF 1106 or MAC 1105. For more information on math courses and math advisors go to `http://www.math.ufl.edu/`.

1b.. Prerequisites. This course assumes prior knowledge of intermediate algebra (Algebra 2). Students should be able to do arithmetic without a calculator.

MAC 1140 begins with a short review of high school algebra topics (appendices A1 A7). **You should already be competent in working this material.**

1c.. Required Materials.
- The textbook: **Precalculus**, 9th edition, by Larson.
  - You may use either the e-book or the hard copy.
  - The solutions manual is NOT required.
- A valid WebAssign access code.
  - WebAssign provides a two-week grace period to use the online homework system before you must purchase an access code.
  - You should always use `https://www.webassign.net/ufl/login.html` to login to WebAssign (and then your Gatorlink login info as directed).

There are several purchase options:
- Purchase the textbok and WebAssign access codes together directly from the publisher at `http://www.cengagebrain.com/course/site.html?id=1-23PFZ4X`. Don't mind the website saying MAC 1147. It is the same book.
  - $95 for the custom UF paperback book, access to the e-book, and a WebAssign access code; or
  - $50 for access to the e-book and a WebAssign access code
- Purchase the textbook at the bookstore or elsewhere.
  - Either the UF custom 9th edition or the complete 9th edition may be used. If you purchase a new textbook, a WebAssign access code might (or might not) come with it, so please be aware.
  - Price may vary.
- Purchase a WebAssign access code directly from WebAssign .

1d.. Canvas. Canvas is located at `https://elearning.ufl.edu/`; use your Gatorlink username and password to login. You can find lecture videos, check point quizzes, bonus quizzes, your grades, announcements, lecture outlines, free help information, etc., at this site. You are responsible for verifying that your grades are accurate. You have one week after a score has been posted to contact your instructor if you believe there has been a grading or a recording error.

1e.. Lectures. Viewing lecture presentations is an important aspect of the learning process. The lecture provides the main presentation of the course material. Each lecture consists of several videos for a total of approximately 1 hour. Lecture outlines can be printed from Canvas. It is suggested that you read the book, watch the lecture, do the checkpoints as they come up in the lecture, do the corresponding book homework

and the WebAssign Homework, and then take the WebAssign Quiz, in that order. The WebAssign Quizzes are due as shown in the various calendars, but you may take them earlier. You may also watch the videos earlier.

1f.. **Calculator Policy.** A basic non-scientific calculator may be used on homework, quizzes, check-ups, and exams. A basic non-scientific calculator has the ability to add, subtract, multiply, and divide, as well as the ability to take square roots (and perhaps buttons for percentages and storing values in memory). It is not the same as a scientific or graphing calculator. You will not be allowed to use a scientific calculator on exams, and any violations of this policy will be considered cheating.

You are encouraged to do most of the arithmetic by hand so that you dont lose your basic arithmetic skills. There is always the chance that somewhere in the future you will not be allowed to use a calculator.

1g.. **Help.** Your instructor is available by email (or arranged conference) to answer your questions about the course material. **You should check Canvas regularly and consult with your instructor if you have any questions about recorded grades. All grade concerns must be taken care of within one week of receiving the score.** Your grade is subject to being raised or lowered if there is a recording error, computational error, bubbling error, padding error, etc.

1h.. **Success.** Success in MAC 1140 depends largely on your attitude and effort. Keeping up with the videos is critical. Most students find it beneficial to work daily on the material as opposed to saving it all for one day. It is not effective to sit and copy notes without following the thought processes involved in the lecture. For example, you should try to answer the questions posed by the lecturer. Students who actively participate have greater success.

Be aware that much of the learning of mathematics at the university level takes place outside of the classroom. You need to spend time reviewing the concepts of each lecture **before** you attempt homework problems. It is also important to spend some time looking over the textbook sections to be covered in the next lecture to become familiar with the vocabulary and main ideas beforehand so that you will be better able to grasp the material presented in the videos. **You should expect to spend at least 16 hours per week working on this course.**

Please do not wait until the last minute to take an assignment. It is student's responsibility to make sure that their technology is working properly. This is an enveloping statement from the homeworks all the way to the exams of this online class. It is in student's hands to make sure to have proper internet connection, electricity, time and other acceptable resources. Therefore it is the students responsibility. Lost time in a timed assignment or a missing due date due to such an event is going to be considered final.

1i.. **Students with Dissabilities.** Students requesting classroom accommodation must first register with the Disability Resource Center. The Dean of Students will provide documentation to the student who must then provide this documentation to the course instructor when requesting accommodation. Students <u>must</u> provide documentation at least one week prior to the first exam.

1j.. **Academic Honesty.** All students are required to abide by the Academic Honesty Guidelines which have been accepted by the University. The academic community of students and faculty at the University of Florida strives to develop, sustain and protect an environment of honesty, trust, and respect. Students are expected to pursue knowledge with integrity. Exhibiting honesty in academic pursuits and reporting violations of the Academic Honesty Guidelines will encourage others to act with integrity. Violations of the Academic Honesty Guidelines shall result in judicial action and a student being subject to the sanctions in paragraph XIV of the Student Code of Conduct. The conduct set forth hereinafter constitutes a violation of the Academic Honesty Guidelines (University of Florida Rule 6C1-4.017).

2. Testing

You must register with ProctorU for each exam at least 4 days prior to the exam date. It is highly recommended that you reserve your exam time slots for all of your exams early in the semester in order to guarantee you can take the exam at the most convenient time for you. See the course calendar for the dates of the exams.

Students are responsible for material covered in the lecture notes, including practice problems at the end of some lectures, all assigned book homework problems, and all assigned WebAssign material.

For each exam you should have <u>only</u> the following items: pencils or pens, your Gator1 picture ID card or a government-issued picture ID, a basic non-scientific calculator, and up to 10 sheets of completely blank, white, scratch paper (no holes, lines, printing, etc.). NO scientific or graphing calculators are allowed. NO CELL PHONES, NO NOTES, NO CALCULATOR MANUALS, NO BOOKS, NO OUTSIDE HELP!

WebAssign exams and all the other assignments should be taken with an internet browser other than the internet explorer or its new name Microsoft Edge. Some features of WebAssign does not work properly with the internet explorer.

The first three exams each consist of 15 questions and have a 90-minute time limit. The final exam consists of 18 questions and has a 2-hour time limit. There is no partial credit unless a question has multiple parts that can be graded separately, in which case each part will be worth a fraction of the questions point-value.

3. Grading

3a.. Course Grade. The course grade is comprised as follows:

Welcome Quiz (in Canvas)	0.8%
Self-evaluation (in Canvas)	0.2%
Lecture Checkpoints (in Canvas)	4.8%
WebAssign Homeworks	8.6%
WebAssign Quizzes (best 11 of 14)	6.6%
Checkups (in WebAssign)	9%
Midterm Exams (in WebAssign :16% each)	48%
Cumulative Final Exam (in WebAssign)	22%

The course grade is then determined by your final percentage as follows, **with cutoffs strictly enforced**:

Grade	Points
A	90.0% and above
A-	87.0% to 89.9%
B+	84.0% to 86.9%
B	80.0% to 83.9%
B-	77.0% to 79.9%
C+	74.0% to 76.9%
C	70.0% to 73.9%
C-	67.0% to 69.9%
D+	64.0% to 66.9%
D	60.0% to 63.9%
D-	57.0% to 59.9%
E	56.9% and below

For information on dropping courses and withdrawals, go to
https://catalog.ufl.edu/ugrad/current/regulations/info/drops.aspx

For information about UF grades and grading policies go to
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

3b.. Welcome Quiz. The Welcome Quiz is to make sure you understand what is expected of you in this course. You will find this assignment on Canvas. It is due at the beginning of the semester; see the calendar for the due date.

3c.. Self-evaluation. The Self-evaluation is a quiz found in Canvas after Exam 2. Its purpose is to let you know your approximate standing in the class. See the calendar for the due date.

3d.. Lecture Checkpoints. In each video is a Checkpoint problem that pertains to the concept recently covered. You should work the Checkpoint problem and write your answer down (a, b, c, d, or e), since you will need to enter your multiple-choice answers in Canvas. Checkpoint problems are due by the lecture due date (see the calendar), but is best to do them as soon as possible.

3e.. Textbook Homework. The textbook homework assignments represent the <u>minimum</u> number of problems you should do in each section. Some homework problems suggest the use of a graphing calculator; they are designed to help you visualize important concepts and to reinforce the mathematical processes involved. The use of a graphing calculator when doing homework is not required, though a scientific calculator may be required to finish working certain problems. The textbook homework will not be graded, but you are encouraged to ask questions about it as necessary.

3f.. WebAssign Homeworks and Quizzes. WebAssign exams and all the other assignments should be taken with an internet browser other than the internet explorer or its new name Microsoft Edge. Some features of WebAssign does not work properly with the internet explorer.
    You have 10 attempts and unlimited time on each WebAssign Homework. You have three attempts and one hour on each WebAssign Quiz. See the calendar for the specific due dates.

The best attempt for each WebAssign Quiz and Homework is the score that is counted. The WebAssign Homeworks and Quizzes are open-book and open-note. You may have a tutor help you with the WebAssign Homeworks, but NOT with the Quizzes. You need to be able to do these problems on your own without any assistance in order to succeed in this course.

3g.. Checkups. The Checkups (in WebAssign) are designed to give you feedback on your understanding of the course material prior to the corresponding midterm exam. They will be like a longer WebAssign Quiz. See the calendar for the due dates.

3h.. Bonus Points. For each lecture, watching the lecture videos and then answering the bonus question found in Canvas can earn you bonus points. This must be done by the due date given for each lecture. The bonus question in Canvas will ask about the picture seen in the video.

3i.. Make-up Policy and Extensions. ALL WORK MUST BE COMPLETED BEFORE THE FINAL EXAM (except for the Final Exam).

- Extensions: Life happens. While it is a much better strategy to work ahead in case life happens to you, occasionally you may fall behind. So, you will be able to submit assignments in Canvas (except for bonus) up to two days after the due date and still receive full credit. In WebAssign, you will be able to request up to a 48-hour extension for any assignment except an exam from within WebAssign. Please note that an extension does not grant you any additional time to take a timed assignment once it is started. Also, please note that this is only meant to be used when one of those rare, unexpected emergencies come up. However, you do not need to contact anyone in order to take advantage of the extensions.
- Extensions for Exams: For each exam, there is a two-day window during which the exam may be taken. The first day of this window is the official due date for the exam, but there will be no penalty for taking it on the second day. However, if you plan to take the exam on the second day and something unexpected happens that prevents you from doing so, then you are out of luck and your only recourse will be to use your make-up exam to replace this missing score. In other words, **you are strongly advised to plan to take the exam on the first day of the exam window, that way if something happens you can re-schedule for the second day as your backup.**
- Make-up Exams and Checkups: You will have the opportunity to take one make-up exam to replace one (missing or low) midterm exam score for any reason. The date of this make-up exam is before the final exam, as shown in the calendar. There are no make-ups for the checkups.
- Homeworks and Quizzes: There are no make-ups, since some of the quizzes are dropped and it is possible to get assistance with homework before you use up your ten attempts.

3j.. Incomplete Grade. A grade of I (incomplete) will be considered only if you meet the Math Department criteria which are found at `http://www.math.ufl.edu/department/incomplete-grades/`. An I only allows you to make up your incomplete work, not redo your work. Also, any request for an I must be received before the final exam.

4. Instructor Evaluations

Students are asked to provide feedback on the quality of instruction in this course based on ten criteria. These evaluations are conducted online at `https://evaluations.ufl.edu`. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at `https://evaluations.ufl.edu/results`.

5. TEXTBOOK HOMEWORK ASSIGNMENTS

You should read the textbook sections covered in each lecture before viewing the video. After each lecture, review your notes and the text to make sure you understand the main ideas prior to working the exercises.

If you have questions about the reading or homework exercises, you may ask your instructor (or a qualified tutor, etc.).

You should complete each assignment before the next lecture, since the material in each lecture often builds on previous concepts.

L1 Real Numbers. Reading: Student Guide, Appendix A.1

Exercises (A.1), page A11: 6, 7, 9, 12, 16, 17, 19, 25, 27, 35, 39, 40, 43, 50, 53, 55, 61, 65, 72, 73, 80

L2 Exponents and Radicals. Reading: Appendix A.2

Exercises (A.2), page A23: 1, 4, 6, 7, 8, 13, 14, 19, 20, 26, 29, 41, 44, 50, 52, 56, 58, 60, 62, 64, 65, 72, 74, 75, 78, 81, 84

Additional exercise: Simplify the radical expression $\sqrt[3]{81x^7y^2} \cdot \sqrt[3]{36x^2y^2}$.

L3 Polynomials and Factoring. Reading: Appendix A.3

Exercises (A.3), page A33: 1, 2, 15, 19, 21, 23, 33, 35, 37, 39, 43, 45, 47, 52, 56, 61, 69, 76, 79, 89, 94, 103, 104, 107

L4 Rational Expressions. Reading: Appendix A.4

Exercises (A.4), page A42: 1, 2, 3, 4, 7, 12, 16, 22, 30, 35, 39, 44, 51, 54, 56, 60, 62, 66, 70, 78, 79, 81, 82

L5 Solving Equations. Reading: Appendix A.5

Exercises (A.5), page A56: 1, 3, 4, 10, 14, 19, 21, 26, 34, 38, 40, 42, 44, 50, 63, 70, 76, 78, 80, 84, 85, 86, 90, 92, 95, 100

Additional exercises: Find all real solutions and check your answers.

1. $6x^{-2} + x^{-1} = 2$
2. $8(m-4)^4 - 10(m-4)^2 + 3 = 0$
3. $(y+3)^{2/3} - 2(y+3)^{1/3} - 3 = 0$
4. $4(x+1)^{1/2} - 5(x+1)^{3/2} + (x+1)^{5/2} = 0$
5. $\frac{1}{x-3} + \frac{3}{x+3} = \frac{6x}{x^2-9}$
6. $\frac{x^2-9}{x^2-2x-3} = \frac{3}{2}$
7. $x^8 - 4x^4 - 5 = 0$
8. $3x^4 + 10x^2 - 25 = 0$
9. $\sqrt{x+7} + 3 = \sqrt{x-4}$
10. $2x = 1 - \sqrt{2-x}$
11. $x = \sqrt{15-2x}$
12. $(5x^2-6)^{1/4} = x$
13. $\sqrt[3]{4x+3} = \sqrt[3]{2x-1}$
14. $(2x-1)^{2/3} = x^{1/3}$
15. $\sqrt{x} - (3)\sqrt[4]{x} - 4 = 0$
16. $x^{1/2} + 3x^{-1/2} = 10x^{-3/2}$

17. Factor $x^6 - 2x^4 + x^2$ completely and find all of the real solutions of the equation $x^6 - 2x^4 + x^2 = 0$.

L6 Linear Inequalities and Algebraic Errors. Reading: Appendices A.6 and A.7

Exercises (A.6), page A64: 4, 7, 9, 15, 28, 38, 40, 53, 54, 58, 69, 76, 78, 81, 82, 83, 85, 87, 89, 91, 94, 95, 98, 102, 103, 109

Exercises (A.7), page A72: 15, 16, 22, 26, 31, 33, 43, 49, 55, 64, 67, 72

L7 Rectangular Coordinates and Graphs. Reading: Sections 1.1 and 1.2

Exercises (1.1), page 8: 1, 2, 3, 4, 14, 24, 32, 45, 51, 54, 56, 58

Note: The correct answer for 58(a) is $(x_0 - y_0)$.

Exercises (1.2), page 19: 3, 4, 5, 10, 26, 28, 29, 31, 34, 38, 43, 47, 48, 71, 74, 76, 79, 90

Additional exercises:

(1) Find the equation of a circle in the standard form with center at the point $(-3, 2)$ and tangent to the line (touching the line) $y = 4$.
(2) Given the circle $x^2 + (y + 1)^2 - 1 = 8$, find its center, radius, and intercepts. (Hint: Sketch the graph.)

L8 Linear Equations and Functions. Reading: Sections 1.3 and 1.4

Exercises (1.3), page 31: 1, 2, 3, 4, 5, 6, 9, 11, 14, 19, 23, 30, 39, 45, 51, 53, 55, 65, 67, 70, 74, 87, 89, 90,91, 93, 94, 96, 99, 101, 102, 103, 104, 105, 112

Exercises (1.4), page 44: 1, 2, 4, 7, 11, 12, 24, 29, 32, 36, 40, 47, 48, 57, 58, 59, 61, 63, 64, 68, 71, 73, 78, 82, 85,86, 88, 89, 90, 93

L9 Analyzing Graphs of Functions. Reading: Section 1.5

Exercises (1.5), page 56: 1, 2, 3, 4, 5, 6, 7, 9, 11, 13, 18, 20, 23, 33, 37, 55, 56, 62, 66, 71, 72, 73, 83, 85, 88a, 93, 94, 95, 96, 98

L10 A Library of Functions and Transformations of Functions. Reading: Sections 1.6 and 1.7

Exercises (1.6), page 65: 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 35, 36, 39, 43, 47, 48, 49, 50

Exercises (1.7), page 72: 1, 2, 3, 4, 5, 9, 11, 13, 14, 15, 16, 17, 19, 20, 21, 23, 25, 27, 29, 31, 33, 39, 47, 50, 51, 53, 55, 57, 71, 73, 74, 75, 76, 78, 80

L11 Combinations of Functions. Reading: Section 1.8

Exercises (1.8), page 81: 3, 9, 13, 17, 18, 23, 25, 31, 34, 35, 37, 42, 43, 45, 51, 55, 59, 60, 61

L12 Inverse Functions. Reading: Section 1.9

Exercises (1.9), page 90: 1, 2, 3, 4, 5, 6, 14, 19, 21, 27, 29, 33, 35, 37, 39, 45, 49, 50, 57, 61, 63, 64, 65, 70, 72, 73, 76, 79, 84, 86, 88, 92, 93, 95, 96, 97, 101

L13 Quadratic Functions. Reading: Section 2.1

Exercises (2.1), page 120: 3, 5, 6, 7, 9, 11, 15, 22, 32, 43, 44, 48, 50, 58, 68, 74, 75, 76, 77, 80, 83, 87, 88, 89, 90, 92

L14 Polynomial Functions of Higher Degree and Division of Polynomials. Reading: Sections 2.2 and 2.3

Exercises (2.2), page 133: 1, 2, 3, 4, 5, 7, 9, 10, 11, 12, 13, 14, 15, 17, 19, 21, 23, 27, 29, 61, 63, 65, 69, 71, 76, 78, 80, 82, 85, 87, 97a, b, 100a, b, 105, 107, 108, 109, 110, 111, 112, 113, 115

Exercises (2.3), page 144: 2, 3, 4, 5, 6, 8, 12, 24, 34, 38, 48, 55, 60, 67, 68, 84, 87, 90, 92, 95, 97

L15 Complex Numbers. Reading: Section 2.4

Exercises (2.4), page 152: 1, 2, 3, 4, 5, 6, 7, 9, 13, 17, 19, 25, 27, 36, 38, 42, 45, 47, 49, 51, 56, 60, 64, 65, 67, 69, 72, 81, 85, 87, 93, 94, 96, 97, 99

L16 Zeros of Polynomial Functions. Reading: Sections 2.5 and 2.6

Exercises (2.5), page 164: 2, 3, 4, 5, 6, 9, 11, 13, 15, 17,20, 26, 30, 33, 46, 48, 50, 52, 56, 62, 63, 78, 99, 104, 113, 115, 116, 117, 118, 119, 120, 121, 122, 123, 128, 130, 131

Exercises (2.6), page 177: 2, 3, 7

L17 Rational Functions. Reading: Section 2.6

Exercises (2.6), page 177: 10, 13, 15, 21, 28, 29, 31, 34, 35, 38, 41, 42, 43, 44, 67, 73 a, b, 78, 80, 81, 82

L18 Nonlinear Inequalities. Reading: Section 2.7

Exercises (2.7), page 187: 1, 2, 3, 4, 7, 13, 15, 24, 28, 30, 35, 36, 37, 38, 46, 52, 53, 66, 74, 76, 78, 90

L19 Linear and Nonlinear Systems of Equations. Reading: Sections 7.1 and 7.2

Exercises (7.1), page 473: 3, 4, 8, 10, 12, 14, 16, 20, 23, 26, 30, 32, 38, 42, 56, 59, 66, 70, 71, 72

Exercises (7.2), page 484: 12, 16, 21, 22, 30, 31, 32, 33, 34, 42, 44, 49 a, c, 52, 62

L20 Exponential Functions. Reading: Section 3.1

Exercises (3.1): page 208: 5, 6, 13, 14, 15, 16, 17-22 all without a calculator, 23-26 all, 39-44 all without a calculator, 52, 54, 57 use calculator, 63 use calc., 65 use calc., 72, 73, 74, 76, 78, 79, 84, 85

L21 Logarithmic Functions. Reading: Section 3.2

Exercises (3.2), page 218: 1-7 all, 9, 11, 13, 15, 17, 19, 25-28 all, 30, 32, 33, 37-40 all, 43, 45, 46, 48, 49, 52, 53, 56, 61, 63, 66, 68, 74, 76, 82, 83, 84, 88

L22 Properties of Logarithms. Reading: Section 3.3

Exercises (3.3), page 225: 4, 5, 6, 7, 15, 16, 18, 19, 21-37 all, 39, 41, 42, 43, 45, 49, 52, 54, 56, 57, 59, 60, 62, 64, 68, 73, 74, 75, 76, 78, 80, 84

L23 Exponential and Logarithmic Equations. Reading: Section 3.4

Exercises (3.4), page 235: 1, 3, 5, 7-17 all, 20, 22, 24, 26, 32, 36-62 even, 72-82 even, 87-90 all

L24 Exponential and Logarithmic Models. Reading: Section 3.5

Exercises (3.5), page 245: 1, 5, 8, 10, 14, 16, 21, 24, 26, 33, 34, 36, 44, 57