

# MAC1140 PRECALCULUS ALGEBRA

SYLLABUS (contains book HW, grading scale, etc.)

SPRING 2012 (as of 1/2/12)

Note: Calendar and sample exams are under the Course Materials link.

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# MAC1140 – Precalculus Algebra

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## 2. INTRODUCTION

**2.a COURSE CONTENT:** MAC1140, Precalculus Algebra is a review of college algebra designed to prepare students for calculus. A minimum grade of C (not C-) in MAC1140 satisfies three hours of the general education requirement and also satisfies the pure math portion of the state Writing/Math requirement.

Students who successfully complete this course (C or better) can advance directly to MAC2233, Survey of Calculus.

For students preparing for MAC2311, Analytical Geometry and Calculus 1, MAC1140 should be followed by MAC1114 Precalculus Trigonometry. The sequence of both MAC1140 and MAC1114 covers the same material and uses the same text as the one semester, faster paced course, MAC1147, Precalculus Algebra and Trigonometry. If you have already received credit for MAC1147, you cannot earn credit for MAC1140 or MAC1114 again.

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 MGF1106 Math for Liberal Arts Majors 1, MAC1107 Math for Liberal Arts Majors 2, or MAC1105 College Algebra. For more information on math courses and math advisors go to <http://www.math.ufl.edu>.

**2.b PREREQUISITES:** There is no specific prerequisite for this course, however, students should be familiar with high school algebraic operations and be able to do arithmetic without a calculator.

MAC1140 begins with a short review of high school algebra topics (appendices A1 – A7). **You should already be competent in working this material.**

**2.c REQUIRED MATERIALS:** Access to the textbook and to the online program WebAssign are required. The solutions manual is NOT required.

Text book –UF custom copy of Precalculus with Limits, 2<sup>nd</sup> edition, by Larson will be used for this course. The text is available at local bookstores. Copies of the book and solutions manual are also available for in-library use at the reserve desk of UF Norman Library and UF Smathers Library West. Homework problems from the text will be graded.

Online homework and quizzes from WebAssign will count toward your grade. Students will need to purchase the access code for the online WebAssign work. **See section 4.f for important WebAssign registration information. You will not be able to register for WebAssign until AFTER the first week of classes.**

There are several options online and in bookstores to obtain the text and the WebAssign access code. You may purchase the access code separately at [www.webassign.net](http://www.webassign.net) or you may purchase everything bundled, which includes the access code, the textbook, and the solutions manual from a bookstore. Webassign provides a two week grace period to use the online homework system before you must purchase an access code.

**2.d E-LEARNING SAKAI:** E-Learning Sakai, a free UF tool, is located at <http://lss.at.ufl.edu>. You can find your grades, announcements, lecture outlines, office hours, free help information, test locations, mail tool, etc. at this site. Sakai should be checked daily. Use your Gatorlink name and password to login.

**2.e LECTURES:** The lecture provides the main presentation of course material and will follow as closely as possible the calendar and lecture outline provided in this guide. **Attendance in lecture is required.** You are responsible for learning lecture material missed due to an absence.

You may print out the lecture notes which can be found on Sakai or you can purchase them at Target Copy Center on 1412 West University Avenue. After class, the worked out solutions to the lecture notes will be available to copy on the door of Little 374.

**2.f DISCUSSION SECTIONS,** which meet on Thursdays give you a valuable opportunity for open discussion of the lecture material and assigned problems in a smaller class setting. A significant portion of the points that determine your grade are earned in discussion class. If necessary, twice during the semester you may attend a different period of your TA's discussion class. Go to [www.math.ufl.edu/courses](http://www.math.ufl.edu/courses) to see when and where your TA teaches.

Your main resource person is your discussion leader, a teaching assistant (TA) in the mathematics department. He or she is available during office hours (or by appointment) to answer your questions about the course material. Your TA is responsible for grading/recording your discussion quizzes, homework, tear-offs on tests, and pop-lecture quizzes. As mentioned above, **you should check Sakai regularly and consult with your discussion leader if you have any questions about recorded grades. All grade concerns must be taken care of within one week receiving the score.** You must retain all returned papers in case of any discrepancy with your course grade. Your grade is subject to being raised or lowered if there is a recording error, computational error, bubbling error, "padding" error, etc.

If you have concerns about your discussion class which cannot be handled by your TA, please contact the course coordinator, Mrs. Tornwall, in Little 374, [tornwall@ufl.edu](mailto:tornwall@ufl.edu) (use Sakai email tool), 392-0281x233.

**2.g FREE HELP:** In addition to attending your discussion section regularly and visiting your discussion leader or the course coordinator, Mrs. Tornwall, during their office hours, the following aids are available.

- The Teaching Center Math Lab, located at SE Broward Hall, offers free informal tutoring. You may want to attend different hours to find the tutors with whom you feel most comfortable. Go to [www.teachingcenter.ufl.edu](http://www.teachingcenter.ufl.edu) to find their hours. You can also request free one-on-one tutoring.

- Textbooks and solutions manuals are located at the reserve desks at Norman Hall Library and Smathers Library West.

- Private Tutors: If after availing yourself of these aids, you feel you need more help, you may obtain a list of qualified tutors for hire at [www.math.ufl.edu](http://www.math.ufl.edu). Search “tutors”.

- The Counseling Center has some informative information on developing math confidence. Go to <http://www.counseling.ufl.edu/cwc/Developing-Math-Confidence.aspx> for information on math confidence and information on joining the Academic Confidence Group.

**2.h SUCCESS:** Success in MAC1140 depends largely on your attitude and effort. Attendance and participation in class is critical. 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 your lecturer. Students who actively participate have greater success.

Be aware that much of the learning of mathematics at the university 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 before the next class. That way you will better be able to grasp the material presented by your lecturer. As with most college courses, you should expect to spend a **minimum** of 2 hours working on your own for every hour of classroom instruction.

It can also be very helpful to study with a group. This type of cooperative learning is encouraged, but be sure it leads to a better conceptual understanding. **You must be able to work through the problems on your own.** Even if you work together, **each student must turn in his or her own work, not a copied solution, on any collected individual assignments.**

**2.i STUDENTS WITH DISABILITIES:** Students requesting classroom accommodation must first register with the Disability Resource Center. The DOS will provide documentation to the student who must then provide this documentation to the course coordinator, Mrs. Tornwall, Little 374, when requesting accommodation.

**2.i ACADEMIC HONESTY GUIDELINES:** 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).

**3. TESTING:** The first four exams are at 8:30 p.m. The cumulative final is during finals week. See the course calendar for the dates. Room locations will be posted on Sakai prior to the exams.

**3.a** Students are responsible for material covered in the lecture notes (including practice problems that we may not have had time to work out during lecture), all assigned book homework problems, and all assigned Webassign material. Sample tests are available from the Teaching Center one week prior to the exam.

**3.b** You should bring to each test only\* the following:

- Your UF Gator One Card.
- Soft lead pencils.
- Knowledge of your section number.

\*It is suggested that you do not bring anything of value to the test since you are not allowed to take items such as backpacks to your seat.

**NO CALCULATORS ARE PERMITTED.** All electronic devices must be put away. This includes phones. Scratch paper and graph paper will be provided.

**3.c** The Test Form Code, as well as your UF ID, name, and section number must be encoded correctly or you will **lose points**. You must also take the test in your assigned test location or you will lose points on your test.

**3.d** No one will be admitted to the test 20 minutes after the starting time of the test. No one will be permitted to leave the test until 20 minutes after the stated start time.

#### **4. GRADING**

**4.a COURSE GRADE:** The course is based on 500 points accumulated as follows:

Web Tour Quiz on Sakai . . . . .	3 points (0.6%)
Syllabus Quiz on Sakai . . . . .	4 points (0.8%)
Contract on Sakai . . . . .	1 point (0.2%)
Self-Evaluation on Sakai . . . . .	2 points (0.4%)
Book HWs (5 @ 5 pts, for a max of 20 pts). . . . .	20 points (4%)
Discussion Quizzes (best 10 of 13 @ 5 pts) . . . . .	50 points (10%)
Online Webassign HWs ( 13 @ 4 pts, for a max of 40) . . . . .	40 points (8%)
Online Webassign Quizzes (best 10 of 13 @ 5 pts) . . . . .	50 points (10%)
Exams (best 3 of 4 @ 75 pts) . . . . .	225 points (45%)
Cumulative Final Exam . . . . .	105 points ( 21%)

Add your bonus points from the pop-lecture quizzes, then use the scale below to determine your final letter grade. The **course grade is determined by the number of points** you have, **not by the percentage**, and will be strictly enforced.

A = 450-500 points (90%)	For information about UF grades and grading policies go to
A - = 435-449 points (87%)	<a href="http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html">http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html</a> .
B+ = 420-434 points (84%)	
B = 400-419 points (80%)	
B - = 385-399 points (77%)	
C+ = 370-384 points (74%)	For information on dropping courses and withdrawals go to
C = 350-369 points (70%)	<a href="http://www.registrar.ufl.edu/catalog/policies/regulationdrops.html">http://www.registrar.ufl.edu/catalog/policies/regulationdrops.html</a> .
C- = 335-349 points (67%)	
D+ = 320-334 points (64%)	
D = 300-319 points (60%)	
D- = 285-299 points (57%)	
E = below 285 points	

**4.b COURSE INTRODUCTION QUIZZES:** The Web Tour Quiz, the Syllabus Quiz, and the Contract Quiz are to make sure you understand what is expected of you in this course. You will find these quizzes on E-Learning Sakai in the Assessment link. These are due at the beginning of the semester.

**4.c SELF-EVALUATION QUIZ:** This quiz is after Test 2. Its purpose is to let you know your approximate standing in the class. This quiz is on E-Learning Sakai in the Assessment link.

**4.d BOOK HOMEWORK:** The homework assignments on page 9 represent the minimum number of problems you should do in each section and serve as a basis for your questions in your discussion section. Homework must be done neatly and work must be shown for credit. You do not need to copy the problem from the book. Homework will be checked for completeness and a few problems will be graded for accuracy. The work should be your own and not copied from the solutions manual. Homework will be collected five times during the semester. See the calendar for collection dates. If you are absent on a collection day, you have one week to bring all the lectures listed on the calendar to your TA during his/her office hours. 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 calculator when doing homework is not required. **Calculators are not permitted on quizzes nor tests.**

**4.e DISCUSSION CLASS QUIZZES** will be administered on Thursday in the discussion section. Quizzes will be based on the previous lectures and homework assignments. See the calendar for more information. If you feel there is a grading error or posting error on Sakai, you must discuss it with your TA within one week. No aids may be used on the discussion quiz.

**4.f ON-LINE WEBASSIGN HOMEWORK AND QUIZZES:** See section 2.c for purchase information. **You will not be able to register for WebAssign until after the drop/add period.** The online WebAssign quizzes, which can be found at <http://webassign.net> are **due by 10:00 p.m. on Sundays.** DO NOT wait until the last minute to take your quiz, since if you encounter a computer glitch or if WebAssign is down, you will be out of luck. You must score a **minimum of 70% on the homework before you can take the quiz.** You have 10 attempts and unlimited time on the homework. You have three attempts and two hours on the quiz. The **online homework is due on Tuesday, April 24 at 10:00 p.m.,** thus you may continue working on the homework to improve your grade. The best quiz and HW scores are counted. The WebAssign homework and quizzes are open book and open note. You may have a tutor help you with the homework, but NOT with the quiz.

**4.g LECTURE BONUS POINTS:** Pop-quizzes will be given in lecture. They are worth two points which will be added to your total points. On these quizzes you may use your book, your notes, work in groups, or get help from the lecturer. To receive credit for these quizzes you must put your TA's name and your section number on your paper. There are no make-ups for the pop-quizzes.

**4.h MAKE-UP POLICY:** All make-up work must be completed by Wednesday, April 25 at noon.

i) **Exams:** If you have a conflict due to a UF sponsored event or an assembly exam in another course, you need to bring your documentation to Mrs. Tornwall in Little 374 at least one week (otherwise 5 point penalty) before the exam to sign up for the make-up which will be given within one week of the test date. If you miss for any other reason you must notify Mrs. Tornwall within a week of the exam (otherwise 5 point penalty). To be eligible for this make-up you must have received at least half of the lecture bonus points. There is a 10 point penalty for missing the final unless you have made a prior arrangement with Mrs. Tornwall.

If other classes are scheduled during the exam time, University policy states that the assembly exam takes precedence over the evening class and the evening class instructor must provide make-up work and cannot penalize students who miss because of an assembly exam.

ii) **Discussion quizzes:** There are no make-ups, unless, **a)** you are participating in a UF sponsored event, for which you must bring your documentation at least one week prior to Mrs. Tornwall. **b)** you miss at least four quizzes for which you have valid, documentable reasons for your absences. You will be allowed to make up the excused quizzes that are in excess of three. To be eligible for a make-up you must have received credit for at least half of the bonus points. Bring your documentation to Mrs. Tornwall in Little 374 within one week of your fourth discussion quiz absence.

c) you miss because of a religious holiday. You must notify Mrs. Tornwall in lecture class within the first three weeks of class if you will be missing discussion class due to a religious holiday. d) you miss because of a court-ordered obligation – see Mrs. Tornwall.

**4.i INCOMPLETE:** A grade of I (incomplete) will be considered only if you meet the Math Department criteria which is found at [www.math.ufl.edu](http://www.math.ufl.edu). If you meet the criteria you must see Mrs. Tornwall before finals week to be considered for an I. An I only allows you to make up your incomplete work, not redo your work.

## MAC 1140 Book HW Assignments

You should read the textbook sections covered in each day's lecture before class. 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 discussion leader in discussion class and during office hours, or you may ask your lecturer before or after lecture and during office hours. Tutoring is also available in the SE Broward math lab.

You should complete each assignment **before** your next lecture class, since the material in each new lecture builds on previous concepts.

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

**Exercises (A.1), page A11:** 11, 13, 29, 30, 31, 35, 39, 43, 44, 45, 48, 53, 55, 56, 59, 60, 61, 67, 72, 73, 75, 89, 91, 95, 101-111 odd, 115, 117, 120, 125-128, 133

**L2 Exponents and Radicals, Reading:** Appendix A.2

**Exercises (A.2), page A24:** 15, 16, 17, 31, 33, 37, 38, 39, 42, 43, 65, 67, 69, 77, 78, 81, 83, 86, 88, 95-98, 104, 105, 111, 114, 115, 118, 126

**Additional HW:** 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 A35:** 9, 24, 31, 32, 36, 40, 44, 45, 57, 61, 63, 67, 71, 72, 75, 77, 91, 93, 95, 99, 103, 105, 109, 113, 118, 123, 124, 135, 141, 143, 145-157 odd, 162, 164, 183, 194, 200, 202, 205, 239, 240

**L4 Rational Expressions, Reading:** Appendix A.4

**Exercises (A.4), page A46:** 7-21 odd, 25-35 odd, 49, 52, 56, 62, 63, 65, 74, 75, 76, 77-81 odd, 83, 84, 85, 87, 90, 93, 104

**L5 Solving Equations, Reading:** Appendix A.5

**Exercises (A.5), page A60:** 7, 21, 29, 32, 36, 40, 41, 43, 44, 49-55 odd, 61, 68, 75, 78, 84, 89, 110, 111, 117, 122, 123, 126, 130, 133, 138, 139, 141, 142, 144, 149, 152, 153, 166

**Additional HW:** 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.  $(y+3)^{\frac{2}{3}} - 2(y+3)^{\frac{1}{3}} - 3 = 0.$

4.  $4(x+1)^{\frac{1}{2}} - 5(x+1)^{\frac{3}{2}} + (x+1)^{\frac{5}{2}} = 0.$

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.  $(5x^2 - 6)^{\frac{1}{4}} = x$

13.  $\sqrt[3]{4x+3} = \sqrt[3]{2x-1}$

14.  $(2x-1)^{\frac{2}{3}} = x^{\frac{1}{3}}$

15.  $\sqrt{x} - (3)\sqrt[4]{x} - 4 = 0$

16.  $x^{\frac{1}{2}} + 3x^{-\frac{1}{2}} = 10x^{-\frac{3}{2}}$

17, Factor  $x^6 - 2x^4 + x^2$  completely and find all 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 A69:** 7-13 odd, 31, 35, 39, 43, 49, 60-66 even, 89, 92, 93, 95, 97-102, 116, 117, 131

**Exercises (A.7), page A78:** 1-17 odd, 33, 35, 36, 37, 41-49 odd, 53, 55, 59, 64, 68

**L7 Rectangular Coordinates and Graphs, Reading:** Sections 1.1 and 1.2

**Exercises (1.1), page 9:** 3, 7-15 odd, 25, 31, 34, 46

**Exercises (1.2), page 22:** 5, 7, 9, 13, 15, 19, 21, 22, 23, 25, 27, 32, 42, 43, 59, 61, 63, 67, 77, 78

**Additional HW:**

1. Find the equation of a circle in 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 34:** 3, 9, 13, 17, 21, 23, 29-32, 39, 41, 45, 47, 51, 65, 68, 69, 89, 94, 107, 112, 113, 117, 122, 126

**Exercises (1.4), page 48:** 1, 7, 13, 15, 25, 29, 33-39 odd, 57, 59, 62, 65, 67, 69, 81, 87, 89, 92

**L9 Analyzing Graphs of Functions, Reading:** Section 1.5

**Exercises (1.5), page 61:** 1, 3, 9, 11, 12, 15, 17, 21, 24, 33, 35, 63, 69-75 odd, 80, 82, 83, 103

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

**Exercises (1.6), page 71:** 57, 59, 60, 63

**Exercises (1.7), page 78:** 7, 11, 13, 15, 17, 18, 25, 33, 51, 52, 53, 65

**L11 Combinations of Functions , Reading:** Section 1.8

**Exercises (1.8), page 88:** 14, 15, 41, 43, 47, 48, 51, 52, 53, 55, 70, 71, 73, 74

**L12 Inverse Functions , Reading:** Section 1.9

**Exercises (1.9), page 98:** 26, 29, 31, 53, 57, 63, 69, 87, 90, 91, 101, 107, 113

**L13 Quadratic Functions , Reading:** Section 2.1

**Exercises (2.1), page 132:** 17, 20, 23, 25, 29, 37, 39, 41, 43, 45, 48, 71, 73, 76, 77, 78, 79, 81, 91, 93

**L14 Polynomial Functions, Reading:** Sections 2.2 and 2.3

**Exercises (2.2), page 145:** 5, 19, 41, 44, 47, 50, 75, 76, 83, 86, 87, 97, 98, 105-107

**Exercises (2.3), page 156:** 14, 23, 28, 38, 44, 47, 55, 60, 68, 69, 87, 96, 97

**L15 Complex Numbers , Reading:** Section 2.4

**Exercises (2.4), page 164:** 7, 25, 40, 41, 46, 47, 48, 55, 58, 60, 63, 67, 72, 79, 83, 84, 85, 91, 92, 93, 94, 95

**L16 Zeros of Polynomial Functions, Reading:** Sections 2.5 and 2.6

**Exercises (2.5), page 176:** 10, 14, 20, 24, 30, 46, 50, 57, 58, 70, 118, 133, 134, 135, 139

**Exercises (2.6), page 190:** 17, 21, 23, 26, 30

**L17 Rational Functions , Reading:** Section 2.6

**Exercises (2.6), page 191:** 13, 16, 33, 35, 43, 46, 73, 79, 81, 85, 86, 88, 89, 90(a)

**L18 Nonlinear Inequalities , Reading:** Section 2.7

**Exercises (2.7), page 201:** 10, 12, 16, 32, 35, 48, 52, 54, 62, 63, 72, 76, 83, 88

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

**Exercises (7.1), page 501:** 10, 12, 14, 15, 28, 33, 56, 61, 83

**Exercises (7.2), page 513:** 10, 24, 30, 40, 43, 51(a)(c), 53, 71

**L20 Exponential Functions , Reading:** Section 3.1

**Exercises (3.1), page 224:** 13-16, 26, 27, 43, 49, 52, 54, 55, 58, 59, 63, 67, 72, 77, 80, 90

**L21 Logarithmic Functions , Reading:** Section 3.2

**Exercises (3.2), page 234:** 11, 18, 23, 25, 26-28, 34, 36, 39, 41, 44, 45-50, 65, 66, 78, 91, 100

**L22 Properties of Logarithms, Reading:** Section 3.3

**Exercises (3.3), page 241:** 9, 17, 24, 27, 28, 31, 32, 34, 35, 41, 43, 47, 49, 58, 63, 71, 73, 79, 82, 85

**L23 Exponential and Logarithmic Equations , Reading:** Section 3.4

**Exercises (3.4), page 251:** 2, 15, 21, 47, 51, 59, 63, 69, 91, 96, 101, 103, 107, 108, 117

**L24 Exponential and Logarithmic Models , Reading:** Section 3.5

**Exercises (3.5), page 262:** 15, 18, 19, 21, 23, 25, 39, 45, 49, 53, 55, 56, 61(a)(b), 62

as of 1/2/12