

University of Delaware
Mathematical Sciences Department

Precalculus
Mathematics 115 - Syllabus

Spring 2008

TEXTBOOK: *Precalculus Essentials*, by Robert Blitzer, 2nd Edition
ISBN 0536 494118

I. COURSE CONTENT

Math 115 - Precalculus, is designed to prepare students for entry into Math 221, Calculus. It is expected that M115 students have a thorough understanding of algebra topics. A review of these topics appears in the **Prerequisites Chapter (P.1 - P.9)**. Students who need to review algebra before attempting precalculus should register for M010.

Students who are planning on taking Math 241 should enroll in Math 117 - Precalculus for Scientists and Engineers. Any student who is not required to take precalculus for his/her major may wish to consult their advisor to determine whether Math 114, Math 113, or Math 127 is more appropriate.

Math 115 is an in-depth study of the concept of functions. We will specifically study linear, quadratic, polynomial, rational, exponential, logarithmic, and trigonometric functions. Both algebraic and graphical techniques will be used throughout the course.

II. COURSE ORGANIZATION

Each Math115 section meets each week for 2.5 hours in either three 50 minute classes or two 75 minute classes. Although most of you have studied precalculus in high school and many may have studied calculus, there are several important distinctions between high school and university mathematics courses that you should note:

The pace of the course is considerably faster than most high school courses.

You are expected to spend significant time outside of class reading the text, doing homework problems, and preparing yourself to participate in class.

There are common exams that all Math 115 students take at the same time - three specific Wednesday evenings (see dates in Section V).

The grading scale is fixed. There is no “curving” nor any special grading arrangements.

III. HOMEWORK

A list of assigned homework problems is included in Section VII of this syllabus. You are expected to complete the problems before the next class meeting. Additional exercises may be assigned by your instructor.

The textbook is new this semester and contains several useful sub-sections within the assigned problems for each section. These include: Practice Exercises; Practiced Plus; Application Exercises, Writing in Mathematics; Technology Exercises; and Critical Thinking Exercises. In addition, each section lists the section objectives and each chapter contains a mid-chapter check point, chapter overview of concepts, review problems and a chapter text. All of these textbook features should be useful learning resources throughout the course. Additional resources to keep up with the material and help you to succeed in the course are:

Instructor's office hours
Mathematics Department tutorial site
Academic Enrichment Center

IV. GRAPHING CALCULATOR

A graphing calculator is required. The **TI-83, TI-83+, TI-84, TI-84+** graphing calculator is recommended. You may not use a **TI-89, TI-92+ or Voyage 200** on exams. While it is permissible to use another brand of graphing calculator, you must know how to use it. Your instructor will use a **TI-83+ or TI-84+** for classroom instruction. Note that calculators such as the **TI-86** are not compatible.

The graphing calculator is an important tool for exploring and understanding the mathematical concepts in this course. It will be used in class, for homework assignments, and will be required on exams. Always take your calculator to class. It is your responsibility to insure that your calculator is working properly during examinations and to know how to use its features. Calculators will **NOT** be provided.

V. TESTING AND GRADING

Your course grade depends solely on the number of points earned throughout the semester. The points are distributed as follows:

EXAM 1	_____	100 points
EXAM 2	_____	100 points
EXAM 3	_____	100 points
FINAL EXAM (cumulative)	_____	200 points
INSTRUCTOR DESIGNATED POINTS	_____	100 points
Total possible points	_____	600 points

Grading Scale:

	<u>Points</u>	<u>Percent</u>		<u>Points</u>	<u>Percent</u>
A	540-600	90-100	C	420-443	70-73
A-	522-539	87-89	C-	402-419	67-69
B+	504-521	84-86	D+	384-401	64-66
B	480-503	80-83	D	360-383	60-63
B-	462-479	77-79	D-	342-359	57-59
C+	444-461	74-76	F	< 342	< 57

Please note that there is no “curving” of grades in this course. There are no special grading arrangements. No exceptions will be made to this grading scheme.

HOURLY EXAMS:

The three exams will be administered from 5:30 p.m. to 6:45 p.m. on three (3) specific Wednesday evenings. Please be in your assigned exam room by 5:15 p.m. Exam room assignments will be announced by your instructor. The exams this semester are as follows:

Exam I:	Wednesday, March 5 th	P.7 - 1.6
Exam II:	Wednesday, April 9 th	1.7 - 3.1
Exam III:	Wednesday, May 7 th	3.2 - 4.3 & 4.8

Students who have a **verified approved university excuse** to miss a regularly scheduled course examination will have that exam score replaced in the following way. That exam score will be the average of the percentage score or all other exams and the final.

If the percentage score received on the final exam is higher than the lowest hourly exam score, the final exam percentage will be substituted for the lowest hourly exam score. This rule does not apply if you miss an exam and have a score of zero.

Please take your student I.D., sharpened #2 pencils, an eraser and a functioning calculator to your exam room. Answers to the exam questions will be posted the next day on the World Wide Web, at <http://www.math.udel.edu/teaching/coursematerials/m115/index.html>

“Scheduling Conflicts”

As established by the Faculty Senate, the policy of the University of Delaware is:

“The Registrar’s Office will insure that there are no conflicts among the common examinations scheduled and will announce the dates and times of the common examinations in the Registration Booklet” (which is now on the UD website).

“In the few instances where it may be necessary for student to schedule a course in conflict with a common examination, the instructor of the single section course will treat the student’s absence from class on that day as excused.”

It is your responsibility to insure that you have no scheduling conflicts. There are no provisions for taking exams at other times. The Final Exam will be scheduled during finals week: Friday, May 23rd - Friday, May 30th. Please do NOT make travel arrangements until you know when your final exam is scheduled. This information is made known to the entire UD community within a few weeks of the beginning of the semester.

Note: The final exam is cumulative! It includes all of the sections listed in the Homework Assignments, including Sections 4.5 - 5.5, which are discussed after the third exam.

VI. ADDITIONAL RESOURCES

The Mathematics Tutorial lab, located in 106 Ewing Hall, is a tutorial and resource room for Math 115 and many other mathematics courses. Limited, but free, tutorial assistance is available there. No appointment is necessary. There are copies of the Instructor's Edition of the textbook, with answers to even numbered problems and also manuals with the solutions for all problems. You may use the materials by checking them out with your ID card

Academic Enrichment Center, located at 146/150 South College (831-2805) provides lists of private tutors available for hire. These tutors are not employed by the University of Delaware. Fees must be negotiated between the student and the tutor. Based on student interest, the Academic Enrichment Center will also schedule group tutoring sessions for Math 115. If you inquire early, the group tutoring day and time will be tailored to your schedule. By later in the semester, the day and time will be fixed.

HOMWORK ASSIGNMENTS

These problems should be completed as soon as possible after the sections are discussed in class. Students who do homework regularly, read the textbook, take good notes and participate in class, have the best chance of being successful on exams and in the course.

Section	Topic	Problem Assignment
P.7	Linear, Rational Literal & Quadratic Equations	1-23 odd, 24, 27-41 odd, 61-63,75,77,81-87 odd, 95, 99-103 odd, 107, 113, 161, 163
P.9	Linear Inequalities	3,5,9,13,29,33,35,41,43,45,51,55
1.1	Graphs & Graphing Utilities	29-40,43,55-60,63,64,71-78
1.2	Basics of Functions and their Graphs	1-9 odd, 10,11-27 odd, 30,32,33,35,37,55,57,58,59,61,62,64-77,79-89 odd, 90,91,93,95,100-104,107,108,114,116,117,121
1.3	More on Functions and their Graphs	3-15 odd, 19, 23-27 odd, 28, 29-43 odd, 61,63,73,75,85-92,95,96,98
1.4	Linear Functions & Slope	1,5,9,13,15,19,21,23,26,29,31-37 odd, 38, 43-57 odd, 61,65,67,73-79 odd, 80,81,83,85-88, 105,106
1.5	More on Slopes	1-11 odd, 21-29 odd, 31-34,39,45,47
1.6	Transformation of Functions	17, 19-21, 23-27, 28,31,45,47,51-57 odd, 65-71 odd, 75-79 odd, 85,89,93,95,99,107,109,113, 123-127,137-145
The material for Exam I ends here.		

Section	Topic	Problem Assignment
1.7	Combinations of Functions; Composite Functions	1-11 odd, 17,19,23,27,31,39-47 odd, 51,53,57-69 odd, 70-73, 75-81 odd, 82-84, 87, 89-93, 104,105,111,116
1.8	Inverse Functions	1-25 odd, 29-31, 33, 35-37, 39-49 odd, 54,56-58,60-64,66,67,72,73,85-91
1.10	Modeling with Functions	3,7,9,11,15,18,19, 21-27, 29,31, 43-45, 47, 61,63
2.2	Quadratic Functions	1-9, 11-17 odd, 21,25,29,35-47 odd, 48,58,59,63-69 odd, 73, 75,80-82,84,90,91,93,94
2.3	Polynomial Functions & their Graphs	1-9 odd, 11-19, 21-31 odd, 43,45,49,55,57, 59,60,61,65-72, 93,95,103
2.6	Rational Functions & their Graphs	1-7 odd, 9-21, 23-53 odd, 57,61,67,69,92,100,104-106, 114, 116-119
2.7	Polynomial & Rational Inequalities	3,5,11,17,21,29,31,35,37,39,43,47,51,53,63,67,69,71, 77-79,83,91,93,95,96,99,102
3.1	Exponential Functions	3-11 odd, 15,19-25, 27-47odd, 48,51,53,55-57,61-65,73,74,81,83,86,87
The material for Exam II ends here.		

Section	Topic	Problem Assignment
3.2	Logarithmic Functions	1,5,9,11,15,18,21,25-43 odd, 47-53,55,57,65-87 odd, 88,89-111 odd, 115-118, 122, 124,125,135,136
3.3	Properties of Logarithms	1-41 odd, 45,49,51,57,59,61-71 odd, 77-89 odd, 90, 91-103 odd, 110,113,116,121
3.4	Exponential & Logarithmic Equations	1,5,13,15,19-25 odd, 29,31,33,37,41-53 odd, 59,61,65-81 odd, 85-91odd, 95,97,101,102,105-115 odd, 116,117,121,125,129,135,136
3.5	Exponential Growth & Decay Models	1,3,4,5,9-21 odd, 27-29, 31,62
4.1	Angles & Radian Measure	7-21 odd, 22,25,27,33-81 odd, 80,93,95,109,112,117
4.2	Trigonometric Functions: The Unit Circle	1,3,5,6,8,9,11,14,15,19-21, 23-47 odd, 53-63 odd, 67,71-75 odd, 83,88,89,95,97
4.3	Right Triangle Trigonometry	1,3,6,8,9-21 odd, 25-35 odd, 39, 43-51 odd, 53-60 all, 64, 66,67,70,73
4.8	Applications of Trigonometric Functions	1-11 odd, 29-35 odd, 41,43,45,46,49,50
The material for Exam III end here.		
4.4	Trigonometric Functions of any Angle	1,7,9,13,17,18,19-29 odd, 33-45 odd, 49,51-57 odd, 60,61,63,68,71,73,77-89 odd, 99,103,109
4.5	Graphs of Sine & Cosine Functions	1,3,5,9,13,15,21,25,29,37,43-49 odd, 53-63 odd, 64,65,71,85,87,91,93, 95,96,111,112
5.1	Verifying Trigonometric Identities	1-37 odd, 41,45,51,53,57,59,67-71 odd, 78
5.2	Sum & Difference Formulas	1-19 odd, 25,29,33,35,39,41,51,57,59,61,65
5.3	Double Angle Formulas	1,2,3,7-19 odd, 23-29 odd, 74,83
5.5	Trigonometric Equations	1-15 odd, 19-23 odd, 25,27

