

**UNIVERSITY OF DELAWARE**  
**DEPARTMENT OF MATHEMATICAL SCIENCES**

**Mathematics 115, Precalculus**

**Fall 2009**

**TEXTBOOK:** *Precalculus Essentials*, by Robert Blitzer, 2<sup>nd</sup> Edition, ISBN 0536 494118

**I. COURSE CONTENT**

Math 115 - Precalculus, is designed to prepare students for entry into Math 221 - Calculus. Students who are planning on taking Math 241 should be enrolled in Math 117 - Precalculus for Scientists and Engineers. Any student who is not required to take precalculus or calculus for his/her major may wish to see an advisor to determine if Math 114 or Math 113 is more appropriate. Math 115 students should have a thorough understanding of algebra topics. Students who need a review of algebra should register for Math 010.

Math 115 involves the in-depth study of the concept of functions. We will also 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 Math 115 section meets for 2 ½ hours each week in three 50 minute classes or in two 75 minute classes.

For most of you this will be your first experience in a university mathematics course. High school and university math courses are very different. Even though most of you had precalculus, or even calculus, in high school, here are some differences you can keep in mind:

- The pace of the course is considerably faster than most high school courses.
- Instead of meeting everyday for a full year, we meet only 2 ½ hours a week for a semester. This results in your having to do much more course work outside of class.
- There are common exams that all Math 115 students take at the same time.
- The grading scale is fixed. There is no curving nor any special grading arrangements.

**III. GRAPHING CALCULATOR**

A graphing calculator is required. The TI-83, TI-83+, TI-84 or TI-84+ graphing calculator is recommended. You may not use a TI-89 on exams or quizzes. It is permissible to use another kind of graphing calculator, with permission from your instructor, and provided you know how to use it.

The graphing calculator will be used in class, for homework assignments, and will be required on exams. It is your responsibility to ensure that your calculator is in working order and to know how to use its features. Calculators will not be provided.

**IV. TESTING AND GRADING**

Your course grade depends solely on the number of points earned throughout the semester. The point distribution follows:

EXAM 1 .....	100	points
EXAM 2 .....	100	points
EXAM 3 .....	100	points
FINAL (Cumulative).....	150	points
INSTRUCTOR DESIGNATED POINTS .....	150	points
<b>Total possible points .....</b>	<b>600</b>	<b>points</b>

The Grading Scale is:

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

**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 on Wednesday evenings. Be in your assigned exam room by 5:15 p.m. The exams this semester are as follows:

	<u>Sections Covered</u>
EXAM I: September 23	P.7, P9, 1.1-1.5
EXAM II: October 221	1.6, 1.7, 1.8, 1.10, 2.2, 2.3,2.6, 2.7, 3.1
EXAM III: November 18	3.2-3.5, 4.1, 4.2, 4.3, 4.8

The exam dates are fixed, but the exact sections covered may vary slightly.

Room assignments for the exams will be announced.

Please take your student I.D., sharpened #2 pencils, an eraser and a working graphing calculator to your assigned exam room.

**It is your responsibility to ensure that you have no scheduling conflicts. There is no provision for taking exams at other times.**

Students who have an excused absence and miss a regularly scheduled course examination, will have the missing exam score replaced by the average of the percentage score of all other exams and the final exam.

#### 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 online.)

“In the few instances where it may be necessary for a 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.”

#### **FINAL EXAM:**

The final will be scheduled during finals week:

Friday, December 11 through Friday December 18.

Please do not make travel arrangements for leaving campus until you know when all of your final exams are scheduled.

The final exam is cumulative. It is on all the sections that are listed in the Homework at the end of this syllabus, including Sections 4.4, 4.5, 5.1, 5.2, 5.3 and 5.5, which are covered after the third exam.

#### **INSTRUCTOR DESIGNATED POINTS:**

How these 150 points are determined varies by instructor.

### **V. ABOUT COURSECOMPASS**

There are 30 homework assignments to be completed using CourseCompass. You can access CourseCompass from your computer once you have registered and installed the appropriate plug-ins and players. The website gives the specific system requirements. There will also be a computing site on campus that you can use, but you’ll still have to register to get your Access Code.

Go to <http://www.coursecompass.com/> on Internet Explorer. Then follow the steps to register as a student.

### **VI. ADDITIONAL RESOURCES**

- The Mathematics Tutorial Lab, 106 Ewing Hall, is a tutoring and resource room for Math 115 and several other math 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 can use the materials by checking them out with your ID card.
- Also available are some actual exams that were left over from previous semesters. They are packed in boxes on the bookshelves. You can take one with you to practice on.

- Copies of previous semester exams, with Multiple Choice answers for all versions may be printed directly from the Department of Mathematical Sciences website at:

[http://www.math.udel.edu/teaching/course\\_materials/m115/index.html](http://www.math.udel.edu/teaching/course_materials/m115/index.html)

(There's an underscore between course and materials.)

These exams are useful so you can see what multiple choice math problems could look like. But the main way to ensure that you do well on the exams is to understand the homework.

- The Academic Enrichment Center, located at 148/150 South College (831-2805), provides lists of private tutors available for hire. These tutors are not employed by the University. Fees must be negotiated between the student and the tutor.

Based on student interest, the Academic Enrichment Center will schedule group tutoring sessions for Math 115. These sessions are usually scheduled for the evening. You can inquire if you're interested.

## VI. ACADEMIC HONESTY

The following statement is from the Student Guide to University Policies. *“All students must be honest and forthright in their academic studies. To falsify the results of one’s research, to steal the words or ideas of another, to cheat on an assignment, or to allow or assist another to commit these acts corrupts the educational process. Students are expected to do their own work and neither give nor receive unauthorized assistance. Any violation of this standard must be reported to the Office of Judicial Affairs.”*

## VII. HOMEWORK ASSIGNMENTS

The following three pages contain the homework assignments for the course.

The column labeled “Textbook Problems to Be Done on CourseCompass” below is a list of assigned problems as they are numbered in your textbook. This is just for your information. When you use CourseCompass these problems are numbered 1, 2, 3, etc. So you will do all the online CourseCompass problems for each section.

In addition to doing the CourseCompass problems and submitting them online by the due date, you should also do, on paper, the additional textbook problems listed. They may be collected in class on the due date.

<u>Sec</u>	<u>Topic</u>	<u>Due</u>	<u>Textbook Problems to Be Done on CourseCompass</u>	<u>Additional Textbook Problems</u>
P.7	Linear, Rational, Quadratic Equations	9/13	1, 3, 11, 13, 15, 17, 23, 25, 29, 31, 33, 35, 37, 39, 41, 55, 57, 59, 61, 65, 75, 79, 81, 83, 87, 95, 99, 101, 105, 107, 111, 113, 131	10, 16, 22, 26, 38, 163, 164, 165, 166
P.9	Linear Inequalities	9/13	3, 5, 11, 13, 17, 19, 27, 31, 37, 39, 41, 43, 45, 49, 55	44
1.1	Graphs and Graphing Utilities	9/23	29, 31, 33, 35, 37, 39, 41, 43, 45, 55, 57, 59	71, 72, 73, 74, 75, 76, 77, 78, 79, 80
1.2,	Basics of Functions and Their Graphs	9/23	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77, 79, 81, 83, 85, 87, 89, 91, 93, 95, 103, 105	10, 32, 64, 76, 90, 106, 118, 119, 120, 121
1.3	More Functions and Graphs	9/23	1, 3, 5, 7, 9, 11, 13, 15, 33, 35, 37, 39, 41, 43, 45, 47, 49, 57, 59, 61, 63, 65, 67, 69, 71, 73, 83, 85, 87, 89, 91	114, 116, 117, 118
1.4	Linear Functions and Slope	9/23	3, 5, 7, 9, 13, 15, 17, 21, 23, 25, 27, 31, 35, 37, 45, 47, 49, 51, 53, 55, 61, 67, 73, 75, 77, 79, 81, 83, 89	105, 106, 107, 108, 109, 110, 111, 112
1.5	More on Slope	9/23	1, 3, 5, 7, 9, 11, 21, 23, 25, 27	none
1.6	Transformations of Functions	10/06	17, 19, 21, 23, 25, 27, 31, 45, 47, 51, 55, 57, 61, 67, 69, 71, 77, 83, 87, 97, 99, 123, 125	124, 126, 141, 142, 143, 144, 145, 146, 147, 149, 150, 151, 152
1.7	Combinations and Composite Functions	10/06	1, 3, 5, 7, 9, 11, 17, 19, 25, 27, 31, 39, 41, 43, 45, 49, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77, 79, 81, 89, 91, 93	112, 113, 114, 115,
1.8	Inverse Functions	10/06	1, 3, 5, 7, 9, 11, 15, 17, 19, 21, 23, 25, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63	30, 32, 34, 36, 38, 54, 56, 58, 60, 62, 64, 91, 92, 93, 94
2.2	Quadratic Functions	10/21	1, 3, 5, 7, 9, 11, 13, 15, 17, 21, 23, 35, 37, 39, 41, 43, 45, 47, 57, 63, 65, 67, 69	94, 95, 96, 97, 99, 100, 101, 104
1.10	Modeling with Functions	10/21	7, 15, 17, 21, 23, 25, 27, 29, 31, 43, 45	18, 26, 30
2.3	Polynomial Functions	10/21	1, 5, 7, 9, 19, 21, 23, 25, 27, 29, 43, 53, 55, 59, 61, 63, 65,	11, 12, 13, 14, 15, 16, 17, 18, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 104, 105, 106, 107
2.6	Rational Functions	10/21	1, 3, 7, 21, 25, 27, 29, 31, 33, 37, 39, 41, 43, 45, 47, 49, 51, 55, 57, 59, 61, 67, 69	9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 120, 121, 122, 123

<u>Sec</u>	<u>Topic</u>	<u>Due</u>	<u>Textbook Problems to Be Done on CourseCompass</u>	<u>Additional Textbook Problems</u>
2.7	Inequalities	10/21	1, 5, 13, 17, 29, 31, 41, 43, 45, 47, 49, 51	98, 99, 100, 101
3.1	Exponential Functions	10/21	3, 7, 9, 15, 19, 21, 23, 25, 27, 29, 31, 35, 37, 47, 51, 53, 55, 57, 61, 63, 65, 73	66, 74, 87, 88, 89, 90, 91
3.2	Logarithmic Functions	11/03	1, 5, 7, 9, 11, 13, 15, 17, 21, 27, 29, 37, 29, 43, 27, 47, 51, 53, 55, 65, 69, 73, 75, 81, 89, 93, 97, 101, 103, 105, 109, 111	139, 140, 141, 142, 143, 144
3.3	Properties of Logarithms	11/03	1, 3, 7, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 43, 47, 53, 57, 59, 63, 65, 67, 69, 71, 75, 79, 81, 83, 85, 87	89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 125, 126, 127, 128
3.4	Exponential and Logarithmic Equations	11/03	1, 7, 13, 17, 19, 21, 25, 27, 31, 33, 37, 39, 41, 43, 45, 47, 49, 51, 43, 55, 57, 59, 61, 65, 67, 69, 71, 73, 75, 77, 81, 83, 85, 87, 89, 91, 95, 97, 101, 105, 107, 109, 111, 115, 117	116, 140, 141, 142, 143
3.5	Exponential Growth, Decay	11/18	1, 3, 5, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 35, 37, 39, 41, 43, 45, 47, 49	79, 80, 81, 82, 83
4.1	Angles and Radian Measure	11/18	7, 9, 15, 17, 19, 21, 25, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 93, 95	none
4.2	Trig Functions: The Unit Circle	11/18	1, 3, 5, 7, 11, 13, 19, 21, 23, 25, 27, 29, 31, 33, 35, 61, 63, 65, 67, 69, 71, 73, 75, 77, 79	none
4.3	Right Triangle Trigonometry	11/18	1, 3, 9, 13, 15, 19, 23, 27, 29, 31, 33, 37, 39, 43, 45, 47, 51, 53, 55, 57, 59	74, 75, 76, 77
4.8	Right Triangle Applications	11/18	1, 3, 9, 11, 29, 31, 33, 35, 41, 43, 45, 49	46, 50, 74, 75, 76, 77
4.4	Trigonometric Functions of Any Angle	12/09	1, 7, 9, 11, 13, 15, 17, 21, 23, 25, 29, 33, 35, 41, 45, 59, 51, 53, 55, 57, 59, 61, 65, 67, 69, 71, 73, 77, 79, 81, 83, 85, 87, 89, 91, 99, 101, 103	20, 28, 62, 64, 70
4.5	Graphs of Sine and Cosine	12/09	1, 3, 9, 17, 21, 23, 33, 35, 37, 39, 43, 45, 47, 49, 53, 61, 53, 65	62, 64, 66

<u>Sec</u>	<u>Topic</u>	<u>Due</u>	<u>Textbook Problems to Be Done on CourseCompass</u>	<u>Additional Textbook Problems</u>
5.1	Trigonometric Identities	12/09	1, 3, 7, 11, 15, 21, 23, 27, 29, 31, 35, 45, 51, 53, 57, 59, 67, 59, 71	78
5.2	Sum, Difference Formulas	12/09	1, 3, 5, 7, 9, 11, 15, 17, 25, 29, 33, 39, 41, 57, 59, 61	none
5.3	Double Angle Formulas	12/09	1, 5, 7, 9, 11, 15, 17, 25, 27	none
5.5	Trigonometric Equations	12/09	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27	none