Essex County College  
Division of Mathematics and Physics  
Syllabus for MTH 120 — Pre-Calculus II  
Fall 2007

Lecturer: Ron Bannon

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Email: bannon@essex.edu  
Regular Hours: Tuesday & Thursday 8:30–10:55;  
Appointment Hours: Monday & Wednesday 11:30–12:55;

• General Education Goals: The aggregate of the core courses will have the following goals:

(Note: Each core course need not address all four goals.)

– Cultural awareness – To enable students to become more aware of the different perspectives emanating from a culturally diverse population;

– Critical thinking and problem solving – To emphasize critical thinking and problem solving; to the extent possible, to include quantitative reasoning and research skills, including accessing information from a variety of sources and media;

– Communication – To enable students to increase proficiency in writing, reading, speaking, and listening skills;

– Computers – To require students to prepare and present information with the use of computers.

• Journal: A Math Journal is required of each student. The Journal entries should be comprised of the following four items:

– Class notes dated and kept in consecutive order.
– Summary of each set of class notes taken.
– Summary of each reading assignment.
– Running vocabulary list kept in the rear of the Journal. The list should not only contain definitions, but specific examples to help clarify the definitions.

The Journal is due at the end of the semester.

• Honor Code: The Honor Code is a statement on academic integrity, it articulates reasonable expectations of students and teachers in establishing and maintaining the highest standards in academic work:¹

1. that they will not give or receive aid in examinations; that they will not give or receive unpermitted aid in class work, in the preparation of projects, or in any other work that is to be used by the instructor as the basis of grading;

¹Adapted from Stanford University’s Honor Code guidelines.
2. that they will do their share and take an active part in seeing to it that others as well as
themselves uphold the spirit and letter of the Honor Code.

- **Working Together:** It is okay to work together on homework. However, when it comes time
for you to write up the solutions on the Projects, I expect you to do this on your own, and
it would be best for your own understanding if you put aside your notes from the discussions
with your classmates and wrote up the solutions entirely from scratch. Working together on
exams, of course, is expressly forbidden.

- **Prerequisites:** MTH 119 with a final grade of “C” or better, or by placement test. I expect a
good working knowledge of algebra and arithmetic, including the ability to deal with a variety
mathematical problems as presented in MTH 119.

- **Text:** *Precalculus Functions and Graphs: A Graphing Approach*, authored by Larson, Hostetler,
and Edwards; published by Houghton Mifflin, Boston, Massachusetts. Any edition is fine.

- **Material to be Covered:** This course completes the comprehensive and integrated treatment
of mathematical topics needed for the study of calculus, differential equations and upper level
mathematics courses at Essex County College. Upon the completion of this course, students
will be able to further analyze precalculus mathematical problems. The use of sophisticated
handheld calculators will be emphasized as an effective means of solving non-traditional pre-
calculus problems. Students will also be expected to develop proficiency in analyzing written
mathematical problems and express solutions to these in written form.

- **Suggested Review Problems:** Do these problems in the order they are covered in class, but
also read the text in each section before doing these problems. Failure to understand these
problems will invariably result in course failure. Do these assignments in the order they are
covered in class, and read the text in each section first.

4.1 Radian and Degree Measure: 5, 7, 9, 11, 13, 27, 31, 43, 55, 57, 75, 77, 83, 85, 95,

4.2 Trigonometric Functions: The Unit Circle: 1, 5, 11, 15, 19, 23, 25, 27, 29, 33, 37,
41, 43, 45, 57, 59.

4.3 Right Triangle Trigonometry: 1, 3, 11, 15, 19, 21, 25, 27, 29, 47, 49, 53, 57, 59, 61,
65, 67, 69.

4.4 Trigonometric Functions of Any Angle: 1, 3, 9, 13, 15, 17, 19, 31, 35, 43, 49, 59,
61, 75, 79, 83, 103.

4.5 Graphs of Sine and Cosine Functions: 1, 15, 17, 21, 45, 57, 71, 75, 77, 79, 81.

4.6 Graphs of Other Trigonometric Functions: 1–8 all, 9, 15, 35, 41, 43, 45.

4.7 Inverse Trigonometric Functions: 5, 7, 9, 10, 23, 25, 27, 29, 31, 33, 35, 43, 47, 49,
71, 73.

4.8 Applications and Models: 1, 11, 17, 21, 27, 29, 35, 43, 49, 61.

5.1 Using Fundamental Identities: 1, 3, 7, 15, 17, 19, 21, 25, 27, 33, 35, 39, 49, 53, 57,
63, 65, 67, 71, 73, 75.

5.2 Verifying Trigonometric Identities: 1–9 odd, 19, 21, 25, 29, 33, 37, 41, 65, 69.

5.3 Solving Trigonometric Equations: 1, 7, 9, 11, 13, 15, 17, 25, 29, 31, 51, 73, 77.

5.4 Sum and Difference Formulas: 1, 3, 7, 9, 15, 19, 21, 35, 37, 41, 43, 47, 51, 55, 57.
5.5 Multiple-Angle and Product-Sum Formulas : 1, 3, 5, 11, 19, 23, 33, 49, 59, 69, 75, 83, 99, 103, 105.

6.1 Law of Sines : 1, 7, 15, 23, 27.


6.4 Vectors and Dot Products : 1, 3, 5, 7, 11, 15, 19, 23, 27, 31, 35.

6.5 Trigonometric Form of a Complex Number : 1, 3, 5, 9, 11, 13, 15, 19, 23, 47, 49, 55, 61, 65, 67, 69, 75, 87, 95, 101, 113.


8.3 Geometric Sequences and Series : 3, 5, 9, 11, 15, 21, 27, 37, 51, 55, 67, 69, 73, 81, 89, 93.

8.4 Mathematical Induction : 1, 5, 7, 9, 13, 27, 37, 39.

8.5 The Binomial Theorem : 1, 9, 19, 25, 31, 33, 45, 51, 65.

10.1 Introduction to Conics: Parabolas : 1–6 all, 7, 13, 19, 21, 31, 35, 39, 41, 43, 55, 57.


10.3 Hyperbolas : 1–4 all, 7, 11, 17, 21, 23, 25, 44–51 all.

10.4 Rotation and Systems of Quadratic Equations : 1, 3, 11, 17, 23–28 all, 41, 49.

10.5 Parametric Equations : 1–8 all, 11, 15, 21, 27, 35, 37, 38, 39, 41, 43, 45, 47, 49, 53.

10.6 Polar Coordinates : 1, 3, 5, 9, 19, 27, 33, 43, 45, 47, 49, 55, 57, 59, 71, 73.

10.7 Graphs of Polar Equations : 1–6 all, 17, 21, 23, 25, 29, 55, 57.

• Projects and Quizzes: Five projects and ten quizzes will be given and graded. The general format of the quiz will be a problem similar to the homework assignment which was assigned in the previous week(s). I expect you to do the suggested exercises first, and if you don’t understand something you should ask questions. The quizzes and projects will be an effective way of monitoring your performance.

• Exams: A proctored departmental midterm (20%) and final (20%) will be given. There will be one additional exam (20%) (exam number two), but that will not be departmental. Each of these three exams is weighed equally, and in total is worth 60% towards the final grade. The material on these exams will be similar to the material covered in class. You must pass the final with at least a 70%.
• **Grading Policy:** 20% is based on quizzes, 60% is based on three full-period exams, and 20% on assigned projects. The letter grade will be based on the following scale:

<table>
<thead>
<tr>
<th>Percentage Range</th>
<th>Grade</th>
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<tbody>
<tr>
<td>94% and above</td>
<td>A</td>
</tr>
<tr>
<td>88% &lt; 94%</td>
<td>B+</td>
</tr>
<tr>
<td>82% &lt; 88%</td>
<td>B</td>
</tr>
<tr>
<td>76% &lt; 82%</td>
<td>C+</td>
</tr>
<tr>
<td>70% &lt; 76%</td>
<td>C</td>
</tr>
<tr>
<td>64% &lt; 70%</td>
<td>D</td>
</tr>
<tr>
<td>below 64%</td>
<td>F</td>
</tr>
</tbody>
</table>

• **Tentative Exam/Quiz Schedule:**

<table>
<thead>
<tr>
<th>Quiz/Test</th>
<th>Date</th>
<th>Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quiz 1</td>
<td>09/14/07</td>
<td>Friday</td>
</tr>
<tr>
<td>Quiz 2</td>
<td>09/21/07</td>
<td>Friday</td>
</tr>
<tr>
<td>Quiz 3</td>
<td>09/28/07</td>
<td>Friday</td>
</tr>
<tr>
<td>Quiz 4</td>
<td>10/05/07</td>
<td>Friday</td>
</tr>
<tr>
<td>Quiz 5</td>
<td>10/12/07</td>
<td>Friday</td>
</tr>
<tr>
<td>Quiz 6</td>
<td>10/19/07</td>
<td>Friday</td>
</tr>
<tr>
<td>Test 1</td>
<td>10/26/07</td>
<td>Friday</td>
</tr>
<tr>
<td>Quiz 7</td>
<td>11/02/07</td>
<td>Friday</td>
</tr>
<tr>
<td>Quiz 8</td>
<td>11/09/07</td>
<td>Friday</td>
</tr>
<tr>
<td>Quiz 9</td>
<td>11/16/07</td>
<td>Friday</td>
</tr>
<tr>
<td>Test 2</td>
<td>11/30/07</td>
<td>Friday</td>
</tr>
<tr>
<td>Quiz 10</td>
<td>12/07/07</td>
<td>Friday</td>
</tr>
<tr>
<td>Final</td>
<td>12/17/07</td>
<td>Friday</td>
</tr>
</tbody>
</table>

• **Calculators:** Students may use a graphing calculator on exams and homework. Please see the me if you have any questions about appropriate use of technology.

• **Civility:** You are expected to act in an adult manner at all times. Here’s a partial list of things that I don’t want to see:

  – **Sleeping:** It is the single most *offensive* behavior.
  – **Slouching:** Pay attention and look alert.
  – **Being Late:** You’re expected to be on time and stay the full period.
  – **Interruptions:** Personal business does not belong in any classroom.