

# MATH& 141

Winter 2015

Item 5872, Section HN

# PRECALCULUS I: COLLEGE ALGEBRA

Everett Community College

MTTh 10:00am – 11:00am

5 Credits

MON 220

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**Instructor:** Hoang Nguyen (✉ RAI 336, ✉ hnguyen@everettcc.edu, ☎ 425-388-9190)

**Office hours:** MTWTh 11:10am – 12:10pm (RAI 336)

## COURSE INFORMATION:

- I. **Description:** (Q, NS) A college level algebra course for all students needing general preparation beyond intermediate algebra. The first of a two-course sequence for students intending to take calculus beginning with MATH& 151. Principles of functions and graphs; theory of polynomial equations; graphs of polynomial and rational functions; exponential and logarithmic functions and applications; conics, foci and applications; non-linear systems; determinants and Cramer's Rule.
- II. **About this Honors Course:** This course will provide students an opportunity to work on diverse discovery projects, and so to explore course materials at a greater depth, to see the coherence of different branches of mathematics, and to improve their analysis and critical thinking skills.
- III. **Prerequisites:** MATH 092, or MATH 099, or equivalent with a grade of C (2.0) or higher, OR placement into MATH 141 via an assessment test score, OR instructor permission.
- IV. **Materials:**
  1. Text: **Algebra and Trigonometry**, 3<sup>rd</sup> edition, Stewart, Redlin and Watson.
  2. Recommended: Student Solutions Manual.
- V. **Canvas:** I will be using Canvas to post announcements, syllabus, lecture notes, handouts, grades and copies of tests (and their solutions).
- VI. **Calculators:** You will need a scientific calculator for this course. A graphing calculator is recommended; however, graphing calculators are *not* allowed on some tests. Calculators on cell phones or calculators that can perform symbolic manipulation (for example, TI-89, TI-92, or TI-Nspire CX CAS) are *not* allowed on any tests (so *no cell phones on tests/final*).

## COURSE OBJECTIVES:

- I. **Student Learning Objectives:** Upon successful completion of this course, students will be able to:
  1. Solve linear, compound, absolute value, quadratic and rational inequalities.
  2. Evaluate and use functional notation to include difference quotients.
  3. Analyze functions to include domains, ranges, restrictions and symmetry.
  4. Sketch graphs of common functions and their transformations.
  5. Perform basic operations on functions to include compositions and inverses.
  6. Use the theory of polynomial equations to find zeros.
  7. Graph polynomial and rational functions to include intercepts and asymptotes.
  8. Analyze exponential and logarithmic functions to include domains, ranges, asymptotes and their graphs.
  9. Evaluate exponential and logarithmic expressions.
  10. Solve exponential and logarithmic equations and associated applications.
  11. Analyze and graph equations of conic sections to include vertices, foci, and asymptotes.
  12. Solve applications involving conic sections
  13. Solve non-linear systems using substitution and elimination techniques.
  14. Evaluate determinants and use them to solve linear systems using Cramer's Rule.

- II. **Learning Outcomes:** This course supports the following Core Learning and Program Specific Outcomes:
1. Engage and take responsibility as active learners.
  2. Think critically.
  3. Analytical reasoning.
  4. Interpret and present mathematical knowledge.
  5. Make connections between mathematics and the real world
  6. Examine relationships and draw conclusions.

### **COURSE WORK & GRADING POLICY:**

- I. **Course Point Breakdown:** The course requirements have the following point values:

Block (3 blocks, 2 counted, 110 points each)	220 points
Discovery project (2 projects, 50 points each)	100 points
Final Exam	<u>150 points</u>
	470 points

Each block consists of one homework set (10 points) and one test (100 points). To get (full) credit on homework/test problems (see the file “A Study System” on Canvas for some illustrations):

1. Write legibly and work the problem in an organized fashion.
2. Show your work for each problem, especially when you are asked to do so.
3. Box or circle your answer.
4. Staple or put your homework in a thin folder (no binders). Homework with those dangling little scraps that you get when you tear a page out of a (spiral-bound) notebook will *not* be accepted.

- II. **Grading Scale:** I will assign letter grades for this course based upon the following scale:

A 93 or above	B+ 87 to 89.99	C+ 77 to 79.99	D+ 67 to 69.99	F below 60
A- 90 to 92.99	B 83 to 86.99	C 72 to 76.99	D 60 to 66.99	
	B- 80 to 82.99	C- 70 to 71.99		

Students who “disappear” from the class and fail to withdraw will receive a final grade of “F”.

- III. **Homework:**

1. There will be one homework set per block. Each homework set is worth 10 points and will be graded on percentage of the problems completed or attempted. Homework will be due when you start the test. Late homework, *except the last one*, will be accepted through the two class days after the due date, but *you can not earn the corresponding extra credit* (see extra credit below).
2. Extra credit: Per homework set, there will be two extra credit problems selected from the problems in the homework set. Each problem is worth 1 point (as extra credit). *You can only earn the corresponding extra credit if you turn your homework in on time.*

- IV. **Tests:** There will be 3 tests (100 points each) given throughout the quarter. The first test that you miss, *due to whatever reason*, will be your drop (see drop below).

- V. **Make-up:** If you miss another test, under special circumstances, you might be allowed to retake the test (*not the last test nor the final exam*). However, you have to let me know *before* the test.

- VI. **Drop:** The lowest block score will be dropped (a block score is the sum of the scores of a test and the corresponding homework set, including the corresponding extra credit).

- VII. **Discovery projects:** There will be 2 discovery projects, each is a group project. You will completely and neatly work the discovery project the way you work a test, and you will also use posters or slides to present your findings. Discovery projects will be evaluated based on (a) completeness and correctness of the work, and (b) coherence and neatness of the presentation.

- VIII. **Final Exam:** There will be a cumulative Final Exam on **Tuesday, March 17<sup>th</sup>, 10:00am – 11:50am.**

## **CLASS EXPECTATIONS:**

- I. **Attendance:** You are expected to attend class daily. *If you miss class, you are responsible for making up the material and for what goes on in class that day.*
- II. **Daily commitment:** You are strongly recommended to work your homework each day in order to master the material. You are also strongly recommended to read some parts of the material that will be covered during the next lecture (and review some related concepts/tools). I will indicate those parts that you should read and/or those concepts that you should review at the end of each class.
- III. **Conduct in class:** You are expected to treat your classmates and the instructor with courtesy and respect at all times. See the Student Handbook for details. This includes turning off all phones and any other noisy devices. Disruptive students will be asked to leave the classroom.
- IV. **Academic honesty:** Academic honesty is expected at all times. Cheating of any kind will not be tolerated. See also the Student Handbook.

## **OTHER INFORMATION:**

- I. **Important dates:**
  - Jan. 05 – First day of class
  - Jan. 09 – Last day to drop with 100% refund (4:30pm)
  - Jan. 16 – Last day to add or drop a class with no record (4:30pm)
  - Jan. 23 – Last day to drop with 50% refund (4:30pm)
  - Feb. 27 – Last day to drop with a W or change to an audit status (4:30pm)
  - Mar. 17 – **Final Exam (Tuesday, March 17<sup>th</sup>, 10:00am – 11:50am)**
- II. **Emergency College Closure:** If the college is closed (bad weather, earthquake, etc.), check Canvas for specific instruction regarding the class. You can sign up for the college's closure notification system at <http://www.everettcc.edu/emergency/>.

## **HELP & OTHER RESOURCES:**

- I. **Special consideration:** Any student who feels he/she may need an accommodation, due to the impact of a disability, should make arrangements to meet with me soon.
- II. **Help with math:**
  1. Me: I am your first resource for help.
  2. Your classmates: It's a great idea to form small study groups (it can really benefit you).
  3. EvCC Tutoring Center: It's free, it's high quality!
  4. Western eTutoring Consortium (<https://www.etutoring.org>): It's free for EvCC students.
  5. Other online resources (for example, StewartMath, KhanAcademy and PatrickJMT).

## **DID YOU KNOW?!**

1. A similarity between doing math and playing tennis: If you think that you can perform well by watching the moves, then you might find yourself in a very awkward situation during your performance (I did experience such situations).
2. Albert Einstein once said: "Since the mathematicians have invaded the theory of relativity, I do not understand it myself any more". So, it is absolutely normal if you feel like Mr. (or Ms.?) Math is confusing you. Yet, do not hesitate to contact me if you have such a feeling.
3. All information on this syllabus is subjected to change at my discretion.

### MATH 141 Tentative Schedule

Week of	Monday	Tuesday	Wednesday	Thursday
<b>Jan. 05</b>	01/05 Intro, P1 – P7	01/06 1.6, 1.7	01/07 2.1, 2.2	01/08 2.4, 2.5
<b>Jan. 12</b>	01/12 3.1, 3.2	01/13 3.3, 3.4	01/14 3.5, 3.6	01/15 3.6, 3.7
<b>Jan. 19</b>	01/19 <b>No class</b>	01/20 <b>Review1</b>	01/21 <b>HW1, Test1</b>	01/22 4.1, 4.2
<b>Jan. 26</b>	01/26 4.2, 4.3	01/27 4.4	01/28 4.5	01/29 4.6
<b>Feb. 02</b>	02/02 5.1, 5.2	02/03 5.3, 5.4	02/04 5.5	02/05 5.6
<b>Feb. 09</b>	02/09 <b>Review2</b>	02/10 <b>HW2, Test2</b>	02/11 11.2	02/12 11.6
<b>Feb. 16</b>	02/16 <b>No class</b>	02/17 11.8, 12.1	02/18 12.2, 12.3	02/19 12.3, 12.4
<b>Feb. 23</b>	02/23 <b>DP1a, Review3</b>	02/24 <b>DP1b, Review3</b>	02/25 <b>HW3, Test3</b>	02/26 14.1, 14.2
<b>Mar. 02</b>	03/02 14.3, <b>DP2a</b>	03/03 14.4, 14.5, <b>DP2b</b>	03/04 <b>DP1c</b>	03/05 <b>DP1d, DP2c</b>
<b>Mar. 09</b>	03/09 <b>DP2d</b>	03/10 <b>DP Presentation</b>	03/11 <b>DP Presentation</b>	03/12 <b>Final Review</b>
<b>Mar. 16</b>	03/16 <b>No class</b>	03/17 <b>Final (10 – 11:50am)</b>	03/18 <b>No class</b>	03/19 <b>No class</b>

## MATH 141 Homework Problems

### Section      Problems

- P.1 – P.7 go through as many examples as you could.  
1.6 1 – 85 (**ooo**: every other odd; for example: **1, 5, 9, ...**)  
1.7 1 – 53 (ooo)  
2.1 1 – 57 (ooo)  
2.2 1 – 89 (ooo), 91, 93  
2.3 optional: go through examples 1 – 5, 9  
2.4 1 – 69 (ooo; 41 optional), 71, 73  
2.5 1 – 45 (ooo)  
3.1 1 – 77 (ooo)  
3.2 1 – 81 (ooo; 29, 69, 73 optional)  
3.3 1 – 49 (ooo; 9, 13, 17, 25, 29, 37, 41 optional)  
3.4 1 – 21 (ooo), 23 – 29 (**odd**)  
3.5 1 – 89 (ooo; 69, 73 optional), 63, 83  
3.6 1 – 61 (ooo)  
3.7 1 – 81 (ooo; 65, 69, 73 optional)

### **Test 1**

- 4.1 1 – 65 (ooo; 49, 57, 61 optional), 43, 44  
4.2 1 – 57 (ooo; 41, 45, 53, 57 optional)  
4.3 1 – 65 (ooo), 67  
4.4 1 – 93 (ooo; 89, 93 optional)  
4.5 1 – 69 (ooo; 69 optional)  
4.6 1 – 77 (ooo; 73 optional)  
5.1 1 – 45 (ooo; 41, 45 optional), 47 – 51 (**odd**)  
5.2 1 – 15 (**odd**), 21, 25, 29, 35  
5.3 1 – 73 (ooo; 69, 73 optional), 75, 77, 83, 85  
5.4 1 – 69 (ooo), 67  
5.5 1 – 81 (ooo), 67  
5.6 1 – 41 (ooo)

### **Test 2**

- 11.1 optional: go through examples 1, 2, 4 – 6  
11.2 1 – 33 (ooo), 37, 39  
11.6 1 – 61 (ooo; 21, 25 find determinant only)  
11.8 1 – 45 (ooo; 33, 37 optional)  
12.1 1 – 25 (ooo; 25 optional), 29 – 49 (**odd**), 53  
12.2 1 – 29 (ooo; 29 optional), 33 – 45 (**odd**), 51  
12.3 1 – 25 (ooo), 31 – 43 (**odd**), 49  
12.4 1 – 21 (ooo), 23 – 33 (**odd**), 39, 43

### **Test 3**

- 14.1 1 – 41 (ooo), no need to turn in  
14.2 1 – 77 (ooo), no need to turn in  
14.3 1 – 69 (ooo), no need to turn in  
14.4 1 – 33 (ooo), no need to turn in  
14.5 1 – 41 (ooo), no need to turn in

**Discovery Project presentation** (Tuesday and Wednesday, March 10<sup>th</sup> and March 11<sup>th</sup>)

**Final Exam** (Tuesday, March 17<sup>th</sup>, 10:00am – 11:50am)