Fall 2021, Second session, 10/25 – 12/17

EASTERN MENNONITE UNIVERSITY

MATH TOPICS 335

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Office: SC09
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MWF 3:50 – 4:55 SSC 107
Office Hours ("By appointment" or specify: **We will work out office hours at first class.**)
You may leave material for me in Suter Science Center: SC050

COURSE DESCRIPTION: Course: Polynomials and Power Series with Applications

Description: Polynomials occur in many areas of mathematics and can be used to model systems in physics and engineering and to make predictions in finance. In this course, we will study the mathematical properties of the coefficients of polynomials and what they tell us about the polynomials. Power series are an extension of polynomials to the case of an infinite number of coefficients. We will study what this extension implies mathematically. Some applications of polynomials and power series will be projectile motion, vibrating systems, electrical circuits and interest rate modeling.

Prerequisite: A Calculus course that covered sequences and series

COURSE OBJECTIVES: *Students will be expected to present coherent solutions with convincing proof to problems that require an understanding of polynomials and power series, which will be given in class and through reading material. Many problems in our world can be better understood or solved with polynomials or power series. Having a working knowledge of these and their properties will allow one to understand many phenomena occurring in nature.*

REQUIREMENTS AND EVALUATION: There will be four teams of two. Fridays are presentation day and I grade each student's presentation on a scale of 0 - 100. Part of being a mathematician is proving and the other part is to verify someone else's proof; that is why there will be two in a team. You will be graded on your presentation and how you evaluate your partner's work. For the final, each of you will turn in a write up on a topic of your choice that deals with polynomials. Guidelines for the topic will depend on how far we get into the study of polynomials. The write up will be turned in on the last final exam day (12/17). This will be worth 200 points.

GRADING: 90 – 100% A, 80 – 89% B, 65 – 79% C, 50 – 64% D, Below 50% F

BOOKS AND MATERIALS: *You will be expected to take thorough notes on Mondays and Wednesdays. I will also hand out typed readings and expect you to use the internet to learn more about topics.*

CLASS ASSIGNMENT SCHEDULE: *We will follow the calendar below as close as possible but will allow flexibility for class discussion, discovery and expansion of ideas.*

ATTENDANCE: *Of course, you must attend class to be able to take notes and to get the material assigned for reading and homework that is presented on Fridays.*

Please note these important dates for the second quarter:

- 10/25 First day of session 2; semester classes resume at 8 am
- 10/29 Last day to add Session 2 classes
- 11/1 Last day to withdraw from semester-long classes with "W" grade
- 11/5 Last day to drop Session 2 classes with no grade
- 11/9 Progress Report/Early Grades sent out for Session 2 classes
- 11/19 Last day to withdraw from Session 2 classes with "W" grade
- 11/24-28 Thanksgiving Recess (no classes meet)
- 11/29 Classes resume at 8 am
- 12/13 Last day of classes
- 12/14-17 Final exams – **Your Final Project is due on Friday 12/17!**