



Guangdong University of Finance

2019 Summer Program

MATH 122 Calculus 2

Course Syllabus

Term: June 3 – July 5, 2019

Class Hours: 14:00-15:50 (Monday through Friday)

Course Code: MATH 122

Instructor: Sema Salur

Home Institution: University of Rochester

Office Hours: TBA

Email: semasalur@gmail.com

Credit: 4

Class hours: This course will have 72 class hours, including 40 lecture hours, professor 10 office hours, 10-hour TA discussion sessions, 2-hour review sessions, 10-hour extra classes.

Course Description:

This is the second course in calculus for engineers, physicists, computer scientists, and mathematicians. You will learn more advanced integration techniques, convergence of sequences and series, power series, and basics of differential equations. Calculus studies the limiting behavior of functions. Functions themselves are among the most important discoveries in history, because they describe the dependence of objects and phenomena in nature. Most functions of interest exhibit a rather regular behavior which makes it possible to understand their infinitesimal properties. This enables us to describe the nature and predict its behavior. The proper understanding of calculus plays a crucial role in careers of mathematicians, physicists, economists, engineers, programmers, and in recent years biologists and other life scientists. This course will teach you how to think and understand the reasons behind formulas. The calculus will give meaning to your future courses and life.



Required Textbooks:

Stewart: Calculus – Early Transcendentals, 8th Edition.

Grading & Evaluation:

Homework and quizzes: 25%

Midterms: 45%

Final: 30%

Course Schedule:

Week1:

- Anti-derivatives and indefinite integrals
- Definite integrals. Fundamental Theorem of Calculus. Substitution
- Integration by parts. Trigonometric Substitution

Week2:

- Integration of rational functions. Strategies for integration, Improper integrals
- Arc length and the area and volume of the surface of revolution.
- Approximation to integrals. Midpoint, trapezoid, and Simpson's approximation.

Week3:

- Work. Center of mass. Applications of integrals
- Sequences and series. Comparison and limit comparison test.
- Integral test.

Week4:

- Alternating series test.
- Ratio and root test.
- Power series. Radius and interval of convergence. Taylor and MacLaurin

Week5:

- First order differential equations. Direction fields.
- Separable equations.
- Exponential growth and decay.