Shanghai University of Finance & Economics

2020 Summer Program

MATH 122 Calculus 2

Course Outline

Term: June 1 – June 26, 2020

Class Hours: 16:00-17:50 (Monday through Friday)

Course Code: MATH 122

Instructor: Professor Vadim Olshevsky

Home Institution: University of Connecticut

Office Hours: TBA and by appointment

Email: olshevsky@gmail.com

Credit: 4

Class Hours: This course will have 52 class hours, including 32 lecture hours, professor 8 office hours, 8-hour TA discussion sessions, 4-hour review sessions.

Course Description:

Calculus 2 is the second of a sequence of three courses in calculus covering basic concepts of calculus. The course covers integration techniques, applications of integrals, basic differential equations, sequences, and power series.

Course Objectives:

The objective of the course is to build an understanding of the fundamental principles and applications of integral calculus through lectures, homework, discussions, quizzes and exams.

Required Textbooks:

Calculus: Calculus: Early Transcendentals, 8th Edition, by James Stewart with WebAssign Access Code. Can be purchased directly at
https://www.cengage.com/c/calculus-early-transcendentals-8e-stewart/9781337771498#compare-

buying-options

It is important that you purchase both the textbook and the WebAssign code, the latter is necessary for the homework assignments.

Homework:

Each assignment will be made available on several days before the section is covered in class. The due date for each assignment will be set by your instructor and will generally be two or three days after the material is covered in class. You will get five attempts for each question.

Grading & Evaluation   **Grade   Range**

Attendance and participation: 10%   A   90-100
Homework: 10%   B   80-89
Midterm: 35%   C   70-79
Final: 45%   D   60-69
                                            F   0-59

Course Schedule:

Week1 *Integration*: Anti-derivative, indefinite integrals, approximating areas, definite integrals, Fundamental Theorem of Calculus, integration formulas, substitutions, integration of logarithmic and exponential functions. Integration by parts, trigonometric integrals.

Week2 *Integration*: Trigonometric substitutions, rational fractions, other strategies, improper integrals. Arclength and surface area, area and volume of revolution

Week3 *Applications of integration*: work, moment, center of mass, *Sequences and series*: Sequences, infinite series, comparison and limit comparison test, divergence and integral tests. Alternating series and ratio tests.

Week4 *Sequences and series*: power series, radius and interval of convergence, Taylor and Maclaurin series

Detailed Course Outline:

Week	Date	Chapter	Topic
	06/01/2019	**1 Review of Cal-**	1.1 Anti-derivatives
			1.2 Indefinite integrals
			1.3 Approximating areas

		culus 1 integration	1.4 The definite integral
1	06/02/2019		1.5 Fundamental Theorem of Calculus 1.6 Integration formulas
	06/03/2019	**2 Integration techniques**	1.7 Substitutions 1.8 Integration of logarithmic and exponential functions 1.9 Integrals resulting in inverse trigonometric functions
	06/04/2019		2.1 Integration by parts 2.2 Trigonometric integrals
2	06/08/2019		2.3 Trigonometric substitutions 2.4 Integrating rational fractions (partial fractions)
	06/09/2019		2.5 Other strategies 2.6 Improper integrals
	06/10/2019	Applications of integration	3.1 Arc length of a curve and surface area 3.2 Area and volume of revolution
	06/11/2019		Exam 1
3	06/15/2019		3.3 work, moments and centers of mass
	06/16/2019		5.1 Sequences 5.2 Infinite series
	06/17/2019	Sequences and Series	5.3 Comparison and limit comparison test 5.4 Divergence and integral test
	06/18/2019		5.6 Alternating series test 5.7 Ratio and root tests
4	06/22/2019		5.8 Power series 5.9 Radius and interval of convergence
	06/23/2019		5.10 Taylor and Maclaurin series
	06/24/2019		5.12 Applications of Taylor polynomials.
	06/25/2019		Final Exam
	06/26/2018		Discussion of final exam

Student responsibilities/expectations:

The main course material will be presented through lectures. A discussion session, to be held every Friday will offer an opportunity for students to discuss course material and assigned problems with a teaching assistant (TA). Students are advised to keep pace with the course material as it is being presented. Consequently, students should endeavor to attend all class meetings and discussion sessions, be early for class, and spend sufficient time working on assigned homework problems. If for any reason

a student misses a class, he/she should endeavor to obtain the notes and learn the missed material before the next class meeting. Students should not hesitate to ask questions or seek additional assistance to ensure that they are staying on pace with the class. Students will be expected to come to class prepared and ready to participate actively. Please, turn off your cell phones and put aside any unrelated material before class begins. Students should exhibit a sense of responsibility and respect towards fellow students. Late-coming to class or early departure from class meetings will not be allowed.

Examinations:

There will be one midterm exam plus one cumulative final exam. The exams will contain problems to solve and definitions, brief explanations of concepts, and simple proofs.