California State University, Sacramento

2021 Summer Program

MATH 122 Calculus 2

Course Outline

Course Code: MATH 122

Instructor: Professor Vadim Olshevsky

Home Institution: University of Connecticut

Office Hours: TBA and By Appointment

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Credit: 3

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: 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: There will be online WebAssign homework assignments for each section of the text. 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 SYSTEM:
Grade Grade Points
A 4.0
A- 3.7
B+ 3.3
B 3.0
B- 2.7
C+ 2.3
C 2.0
C- 1.7
D+ 1.3
D 1.0
D- 0.7
F 0.0

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.

Week2 *Integration*: Trigonometric integrals and substitutions, integrating rational functions, other strategies, improper integrals.

Week3 *Applications of integration*: Arc length and surface area of revolution, parametric curves, areas and length in polar coordinates, work, moment, center of mass, ordinary differential equations (basic concepts, direction fields, separable equations)

Week4 *Applications of integration*: conic sections, exponential growth and decay, the logistic equation. *Sequences and series*: Sequences, infinite series, comparison and limit comparison test, divergence and integral tests, alternating series and absolute convergence, power series, Taylor and Mackaurin series, applications of Taylor polynomials.

Student responsibilities/expectations: The main course material will be presented through lectures. Students are advised to keep pace with the course material as it is being presented. Consequently, students should endeavor to attend class and discussion sessions, 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. Students should not hesitate to ask questions or seek additional assistance to ensure that they are staying on pace with the class.

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