

California State University, Sacramento

2021 Summer Program

MATH 126 Calculus With Analytic Geometry III

Course Outline

Course Code: MATH 126

Class Hours: ONLINE

Instructor: Vadim Olshevsky

Home Institution: University of Connecticut

Office Hours: TBA and by appointment

Email: olshevsky@gmail.com

Credit: 3

Course Description: This is a third course in the calculus sequence that provides a thorough introduction to a rather diverse range of topics: 3D curves and surfaces, vector calculus, polar coordinates, multivariable functions, partial derivatives, optimization, double and triple integrals.

Course Objectives: The goal of the course is to provide a strong foundation and mastery of calculus in two and three variables and the geometry of vectors, lines, planes, curves, and surfaces for students who intend to continue in mathematics, physics, engineering, computer science, and other quantitative disciplines such as economics and finance.

Required Textbooks:

Calculus: Early Transcendentals, 8th Edition, by James Stewart with the 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. We plan to cover the chapters 12 – 16.

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: Introduction, vectors in three-dimension, dot and cross products, lines and planes in three dimension, implicit/parametric surfaces, cylinders and quadratic surfaces, vector functions, derivatives and integrals of vector functions.

Week2: Arc length and curvature, functions of several variables, limits and continuity, partial derivatives, tangent planes and linear approximation, differentiability, the chain rule, gradient and directional derivatives.

Week3: Maxima and minima, Lagrange multipliers, double integrals, double integrals in polar coordinates, area of a surface of revolution.

Week4: Surface area, triple integrals, Vector fields, Line integrals, The fundamental theorem of line integrals, Green's theorem, Curl and divergence, Surface integrals, Stokes' theorem, divergence theorem.

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 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.