The Department of Mathematics  
2023–24–A term

Course Name  Calculus 1 for engineering  
Course Number  201.1.9711  
Course web page  https://www.math.bgu.ac.il/en/teaching/fall2024/courses/differential-and-integral-calculus-me1  
Office Hours  https://www.math.bgu.ac.il/en/teaching/hours

Abstract

Requirements and grading

Course topics

In this course the basic concepts of one-dimensional analysis (a limit, a derivative, an integral) are introduced and explored in different applications: graphing functions, approximations, calculating areas etc.

.1 Limit of a function, continuity.
.2 Derivative, basic derivative formulas.
.3 Derivative of an inverse function; derivative of a composite function, the chain rule; derivative of an implicit function.
.4 Derivatives of high order.
.5 The mean value problem theorem. Indeterminate forms and l’Hospital’s rule.
.6 Rise and fall of a function; local minimal and maximal values of a function.
.7 Concavity and points of inflection. Asymptotes. Graphing functions.
.8 Linear approximations and differentials. Taylor’s theorem and approximations of an arbitrary order.

Information may change during the first two weeks of the term. Please consult the webpage for updates.
.9 Indefinite integrals: definition and properties.

.10 Integration methods: the substitution method, integration by parts.

.11 Definite integrals. The fundamental theorem of integral calculus (Newton-Leibniz’s theorem).

.12 Calculating areas.