אוניברסיטת
בן-גוריון בנגב

The Department of Mathematics

2017–18–A term

Course Name Infinitesimal Calculus 3

Course Number 201.1.0031

Course web page
`https://math.bgu.ac.il//en/teaching/fall2017/courses/infinitesimal-calculus-3`

Lecturer Dr. Inna Entova-Aizenbud, <entova@bgu.ac.il>, Office 312

Office Hours `https://math.bgu.ac.il/en/teaching/hours`

Abstract

Requirements and grading[1]

Course topics

- Basic concepts of topology of metric spaces: open and closed sets, connectedness, compactness, completeness.
- Normed spaces and inner product spaces. All norms on $\mathbb{R}^n$ are equivalent.
- Theorem on existence of a unique fixed point for a contraction mapping on a complete metric space.
- Dffierentiability of a map between Euclidean spaces. Partial derivatives. Gradient. Chain rule. Multivariable Taylor expansion.
- Open mapping theorem and implicit function theorem. Lagrange multipliers. Maxima and minima problems.
- Riemann integral. Subsets of zero measure and the Lebesgue integrability criterion. Jordan content.
- Fubini theorem. Jacobian and the change of variables formula.
- Path integrals. Closed and exact forms. Green's theorem.
- Time permitting, surface integrals, Stokes's theorem, Gauss' theorem

[1] Information may change during the first two weeks of the term. Please consult the webpage for updates