אוניברסיטת
בן-גוריון בנגב

The Department of Mathematics

2019–20–B term

Course Name Geometric infinitesimal calculus 2

Course Number 201.1.1041

Course web page
`https://www.math.bgu.ac.il//en/teaching/spring2020/courses/geometric-infinitesimal-calculus-2`

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

Abstract

Requirements and grading[1]

Embedded dffierentiable manfiolds with boundary in Euclidean space. The tangent space, normal, vector fields. Orientable manfiolds, the outer normal orientation. Smooth partitions of unity. Multilinear algebra, k-dimensional volume forms in n-space. Dffierential forms on embedded manfiolds, the exterior derivative. Integration of dffierential forms and the generalized Stokes theorem. Classical formulations (gradient, curl and divergence and the theorems of Green, Stokes and Gauss). Closed and exact forms. Conservative vector fields and existence of potentials. Application to exact ordinary dffierential equations. Introduction to dffierential geometry: curvature of curves and surfaces in 3 dimensional space, the Gauss map, the Gauss-Bonnet theorem (time permitting).

Course topics

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

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