

The Hebrew University of Jerusalem

Syllabus

Analysis on manifolds - 80416

Last update 26-03-2025

HU Credits: 4

Degree/Cycle: 1st degree (Bachelor)

Responsible Department: Mathematics

<u>Academic year:</u> 0

Semester: 2nd Semester

<u>Teaching Languages:</u> Hebrew

<u>Campus:</u> E. Safra

Course/Module Coordinator: Or Hershkovits

Coordinator Email: or.hershkovits@mail.huji.ac.il

Coordinator Office Hours:

Teaching Staff:

Prof. Or Hershkovits, Mr. Jonathan Shaulker

<u>Course/Module description:</u> Regular surfaces, Integration on surfaces, Line integrals, Green's Theorem, Gauss' Divergence Theorem, Stokes' Theorem, Curves in R^3, curvature and torsion and the Serret-Frenet equations, surfaces in R^3, First and Second fundamental forms, Theorema Egregium, abstract surfaces, introduction to manifolds.

Course/Module aims:

Learning outcomes - On successful completion of this module, students should be able to:

1. The students will be able to recover the proofs appearing in class

2. The students will be able to check whether an object is a manifold, to compute integrals on it, and to apply theorems which relate the integral on a body and the integral on its boundary.

Attendance requirements(%):

Teaching arrangement and method of instruction:

Course/Module Content:

See Course description. Additional topics might be taught, and some topics might be skipped over.

<u>Required Reading:</u> None

Additional Reading Material:

R. Courant and F. John, Introduction to Calculus and Analysis, Vol I, Vol. II/1 and Vol II/2

Zorich, Mathematical Analysis I & II

Munkres, Analysis on manifolds.

Do-Carmo, Differential Geometry of curves and surfaces.

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<u>Grading Scheme:</u> Written Exam % 90 Submission assignments during the semester: Exercises / Essays / Audits / Reports / Forum / Simulation / others 10 %

Additional information: