



The Hebrew University of Jerusalem

Syllabus

DIFFERENTIAL EQUATIONS - 80320

Last update 14-03-2021

HU Credits: 4

Degree/Cycle: 1st degree (Bachelor)

Responsible Department: Mathematics

Academic year: 0

Semester: 2nd Semester

Teaching Languages: Hebrew

Campus: E. Safra

Course/Module Coordinator: Dr. Miriam Bank

Coordinator Email: miriamb@ma.huji.ac.il

Coordinator Office Hours: Sunday 13:00-13:45 Ross 64

Teaching Staff:

Dr. Or HersHKovits,
Mr. Eyal selig

Course/Module description:

The course will concern with the general theory of ordinary differential equations (existence, uniqueness, domain of definition, dependence on initial conditions, linear equations) and with the prototypes of partial differential equations of second order.

Course/Module aims:

Same as in learning outcomes.

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

Ability to prove and apply the theorems presented in the course.

Ability to apply correctly the mathematical methodology in the context of the course.

Acquiring the fundamentals as well as basic familiarity with the field which will assist in the understanding of advanced subjects.

Ability to understanding and explain the subjects taught in the course.

Attendance requirements(%):

0

Teaching arrangement and method of instruction: Lecture + exercise

Course/Module Content:

Solvable differential equations of the first order. Existence and uniqueness theorems. Estimation of maximal domain definition. Systems of differential equations and high order equations. Systems of linear ordinary differential equations of the first order and linear equations of high order.

The method of characteristics, Laplace equation, the heat equation and the wave equation.

Required Reading:

none

Additional Reading Material:

- 1) Ordinary differential equations - Lecture notes by Simon Brendle.
- 2) Ordinary differential equation and dynamical systems - Gerald Tschel.
- 3) Partial differential equations - Lawrence Evans.
- 4) Partial differential equations - Andras Vasy.

Additional books:

- (5) פישלוב, א. פרחי, משוואות דיפרנציאליות רגילות, תיאוריה ותרגילים, (בק) 2007
(6) פראנק אירס, משוואות דיפרנציאליות, סידרת שאום (תרגום מאנגלית)
(7), החוברת של האוניברסיטה הפתוחה, כרכים 1,2,3,4 "מבוא למשוואות דיפרנציאליות"

Course/Module evaluation:

End of year written/oral examination 90 %
Presentation 0 %
Participation in Tutorials 0 %
Project work 0 %
Assignments 10 %
Reports 0 %
Research project 0 %
Quizzes 0 %
Other 0 %

Additional information:

If needed, a final exam will be held electronically.

If it will be impossible to held an exam electronically, the final grade will be given on the basis of the home-works

*In addition,
a midterm exam can take place. In this case, the midterm exam grade will not decrease the final course grade, it can only increase the final grade*