האוניברסיטה העברית בירושלים THE HEBREW UNIVERSITY OF JERUSALEM



The Hebrew University of Jerusalem

Syllabus

PHYSICS (A) (EXTENDED) - 71031

Last update 10-10-2018

HU Credits: 6

Degree/Cycle: 1st degree (Bachelor)

Responsible Department: Soil and Water Sciences

Academic year: 0

Semester: 1st Semester

<u>Teaching Languages:</u> Hebrew

Campus: Rehovot

Course/Module Coordinator: Yair Mau

<u>Coordinator Email: yair.mau@mail.huji.ac.il</u>

Coordinator Office Hours: thursday 09:00-10:00

Teaching Staff:

Dr. Mr. Ms.

Course/Module description:

The course deals with the basic constituents of Classical Mechanics: space, time and mass. Each topic builds on the previous topics, integrating the different concepts as the course advances. The main subjects are: Kinematics, Newton's Laws, Energy, Momentum and Hydrodynamics.

Course/Module aims:

The course provides the student with the most basic concepts in Classical Mechanics. The goal is to look at the world around us and try to describe it in terms of movement through space, and the conservation of energy and momentum. Most importantly, we aim at providing the student with conceptual tools that can readily be applied in other contexts outside of the Physics classroom, such as: thinking in terms of orders of magnitude, graph reading, dimensional analysis, dealing with spatial processes in a visual and abstract manner, thinking in terms of densities (mass density, energy density, etc).

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

1. Translate a real-life problem related to mechanics to mathematical expressions and graphs.

2. Read a graph and tell a story (in words) that can be inferred from it.

3. Solve real-life problems in mechanics using abstract concepts such as vectors, conservation laws, forces, dimensional analysis.

<u>Attendance requirements(%):</u> 100

Teaching arrangement and method of instruction: Lectures, exercises and tests

Course/Module Content:

- Kinematics in one and two dimensions

- Newton's laws

- Energy and Work
- Momentum and Impulse

HydrostaticsHydrodynamics

Required Reading:

מבינים פיזיקה, קמינגז

Additional Reading Material:

-Principles of Physics, 10th edition, Resnick, Halliday, Walker יסודות הפיסיקה א׳, הוצאת האוניברסיטה הפתוחה -מכניקה מאת שלמה ניר

<u>Course/Module evaluation:</u> End of year written/oral examination 70 % Presentation 0 % Participation in Tutorials 0 % Project work 0 % Assignments 10 % Reports 0 % Research project 0 % Quizzes 20 % Other 0 %

Additional information: