האוניברסיטה העברית בירושלים
THE HEBREW UNIVERSITY OF JERUSALEM

The Hebrew University of Jerusalem

Syllabus

PHYSICAL CHEMISTRY LAB - 69313

Last update 06-09-2022

HU Credits: 4

Degree/Cycle: 1st degree (Bachelor)

Responsible Department: Chemistry

Academic year: 0

Semester: 2nd Semester

Teaching Languages: Hebrew

Campus: E. Safra

Course/Module Coordinator: Uri Raviv

Coordinator Email: uri.raviv@mail.huji.ac.il

Coordinator Office Hours: By appointment

Teaching Staff:

Prof Elad Gross,
Ms. Tal Binyamin,
Ms. Tamar Tayri,
Mr. David Stone,
Mr. Noam Levinsky,
Mr. Ariel Cohen,
Prof Uri Raviv,
Dr. Daphna Shimon,
Mr. Ilay Perez,
Ms. Mnar Ghrayeb,
Ms. Noa Battat,
Prof Micha Asscher,
Ms. May Moshkovitz,
Ms. Iris Berg,
Dr. Ido Hadar,
Mr. Gil Olgenblum,
Mr. Ben Aizenshtein

Course/Module description:

Experiments in basic physical chemistry concepts and instrumentation. Includes experiments covering the following topics: Gas laws, utilizing basic vacuum systems; Chemical kinetics; Thermodynamics of solutions, mixtures and chemical reactions; Electrical conductivity in solutions and transport properties; Photochemistry and photophysics in solutions; Introduction to lasers.

Course/Module aims:

First acquaintance with methods of planning, conduction and analysis of experiments in physical chemistry, emphasizing the methodology how to conduct and document proper and accurate experiments. A central element is data analysis based on existing theory while developing critical and independent thinking.

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

To plan and conduct basic experiments in physical chemistry.

To perform quantitative and critical measurements of basic physical parameters such as pressure, temperature, conductivity etc. Get preliminary experience with basic instrumentation that is relevant to Physical Chemistry.

To write a detailed documentation and a scientific report of the experimental results.

To quantitatively compare and analyze the results based on well accepted theory

and models.

Attendance requirements(%):
100%

Teaching arrangement and method of instruction: Weekly lab experiment, in which preparation is tested by a written quiz and an oral colloquium. Experimental work is conducted in couples. Lab report is handed in every week and is graded for each experiment.

Course/Module Content:
Current experiments (subject to change) include:
Equilibrium in solution
Kinetics
Effusion
Photochemistry and Laser
Intro to Electronics
Raoult's Law
Mobility of Ions (Hittorff)
Speed of Sound
Ostwald
Iodine-Iodide
One week of further study of one of the above.

Required Reading:
Reading material appears in the lab web site for each of the experiments. This is composed of a written lab notebook and protocol and auxiliary literature when and if needed. This material is the basis for a weekly quiz prior to the actual experiment every week.

Additional Reading Material:
Students must be well prepared for each experiment. They have, therefore to further read the recommended literature and beyond, as necessary on a personal basis.

Course/Module evaluation:
End of year written/oral examination 20 %
Presentation 0 %
Participation in Tutorials 15 %
Project work 0 %

Assignments 0 %
Reports 45 %
Research project 0 %
Quizzes 20 %
Other 0 %

Additional information:
Course website is in the Moodle system.

First week is devoted to an acquaintance meeting, definition of regulations and safety procedures. Attendance is mandatory.

Final grade is based on quizzes, colloquia, experimental work and primarily the lab reports, as stated above.