

Environmental Chemistry - 127109

Wednesdays 14:30-17:30

Staff

Prof. Charles E. Diesendruck, charles@technion.ac.il
to be decided

Syllabus

1) Greenhouse effect. Energy balance, heat, thermodynamics. Temperature cycle. Relevant gases and their spectra. Analytical methods.

2) Energy. Old, current, new and future. Fossil fuels, nuclear chemistry, hydrogen, photochemistry. Power vs. charge. Production vs. conversion. Specific issues - transportation, grid.

3) Air pollution: SO_x, CO₂, CO, O₃, NO_x, aerosols. acid rain. Analytical methods.

4) The ozone hole. Creation, definitions, causes, solutions, cycle. Analytical methods.

5) The plastic industry. Plastic - why and what. The lifetime contradiction. Recycling. Economic vs. environmental. Microplastics.

6) Water and water pollution. Water sources, ions in water. Heavy metals, mercury. Fluorinated compounds. Analytical methods. Israel water resources, criteria and regulations for water quality. Water purification. Desalination.

7) Toxic organic compounds. Pesticides, dioxins, PCBs. Carcinogens.

8) The chemical industry. Considerations in a chemical process. Waste treatment. Israel case. Analytical methods. Green chemistry, life-cycle assessment. Economic vs. environmental.

Grade:

85% - final test (home test)

10% - homework submission (-1)

5% - mandatory attendance (-1)

Classes - 2h, mandatory presence.

Exercise class - 1h, mandatory presence.

Homework submission via Moodle.

Final home test: Submission via Moodle.