EF2243 Solar System Physics 7.5 credits

Solsystemsfysik

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

Course syllabus for EF2243 valid from Autumn 2024

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Electrical Engineering,Engineering Physics

Specific prerequisites

Knowledge in basic mechanics and in electromagnetism or electrical engineering for a total of 10 credits.

Knowledge in mechanics may, for example, have been acquired through

- completed course in mechanics, 6 credits, such as SG1102/SG1109/SG1112/SG1117/SG1120/SG1130/SG1132/SG1133

- completed course in physics, 6 credits, with parts dealing with mechanics like SK1108.

Knowledge in electromagnetism or electrical engineering may, for example, have been acquired through

- completed course in theoretical electrical engineering, 6 credits, such as EI1320/EI1220/EI1228
- completed course in electrical engineering/circuit electronics/electrical principles, 6 credits, such as HE1027/IF1330/IE1206/EI1110/EI1120/MF1016/MF1017/HE1200
- completed course in physics, 6 credits, with parts dealing with electromagnetism, magnetic fields and waves as SK1104/SK1108/SK1110/SK1112/SK1114/SK1115/SK1117/SK1118.

Knowledge in English corresponding to the Upper Secondary School course English B/English 6.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

After passing the course, the student shall be able to

- describe the essential stages of how our solar system was formed
- give an account of basic properties of planetary atmospheres and ionospheres including composition, vertical profiles, sources and losses
- define and compare the different bodies in our solar system and describe their magnetospheres
- analyse and explain examples of original data from telescope and space probes
- give an account of physical principles of experimental methods that are used most often in planetary plasma physics
- describe measurement methods for space probes and their technical implementations
- research, critically review and summarise in a presentation a subject related to the physics of planetary environments.

Course contents

- development of the smaller and larger celestial bodies of the solar system
- physics of the atmospheres, ionospheres and magnetospheres of the planets
- rocky planets, gas- and ice giants
- smaller bodies: comets, asteroids and other small celestial bodies
- space exploration and space probes
- instrument for in-situ measurements in planetary environments
- remote sensing of planetary environments with groundbased and spaceborne telescopes

- computing and analysis of original data from planetary environments

Examination

- LAB1 - Laboratory work, 3.0 credits, grading scale: P, F
- SEM1 - Seminars, 1.5 credits, grading scale: P, F
- TEN1 - Oral exam, 3.0 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.