Practical Astronomy

e-Prospectus course description 2018-2019

https://studiegids.leidenuniv.nl/courses/show/81779/praktische-sterrenkunde (in Dutch)

Admission requirements
Astronomy bachelor courses Introduction to Astrophysics and Programming Methods

Description
In this course you will perform astronomical measurements including observations, to study relevant physical processes. You will learn how to process astronomical data and how to calculate uncertainties. Subsequently, you will tackle realistic astronomical problems, using your programming knowledge and experience from the first semester of the Astronomy bachelor's programme. You will gain hands-on experience in the practice of handling telescopes and performing astronomical observations during a visit to the Artis Planetarium in Amsterdam and working at the Old Observatory in Leiden. Based on data experiments you will write research reports about astronomical subjects covered in the first semester. For this course, it is important to organise your activities outside the classical sessions well. And in addition to collaborating in data processing, you also learn how to write a scientific report. The course covers the following themes: • Error analysis and calculating measurement errors • Selecting astronomical data from digital files • Evaluating simple rules and relations in measurement data • Writing a report according to scientific standards • Working with photometric, astrometric and spectroscopic data

Course objectives
After this course, you can process astronomical measurement data within the context of astrophysical laws as introduced in the Introduction to Astrophysics course. For that, you will apply a correct error analysis and report all this in a scientific report. After this course, you will be able to: • Compose compact Python code for scientific analysis; • Perform linear least squares method and derived methods; • Select and combine astronomical samples; • Construct simple astronomical charts; • Reference scientific literature; • Apply distance modulus; • Construct a color-magnitude plot; • Perform and process astronomical CCD observations; • Identify spectral lines and measure Doppler shifts.

Soft skills
In this course, you are trained in the following soft skills: • Planning your work well in advance • Knowing when and where to ask for help • Collaborating with other students and to complement each other within a team • Writing based on facts

Mode of instruction

- Instruction sessions
- Clinics
- Observation nights and afternoons

Assessment method

Written reports. The final grade is a weighted average of the experiment reports. Reports assessed as 'insufficient' can be improved and handed in again; these will be assessed with a maximum grade of 6.0.

Reading list

Background texts and instructions will be made available via Blackboard.

Contact

Lecturer: Prof.dr. Huib-Jan van Langevelde

Remarks

In addition to the lectures planned in the schedule, availability on fixed observation nights in the period February-April is essential. Depending on weather conditions all students perform observations in small groups during one or two nights in this period, between 17.30 and 21.30 hrs.

This translation is provided by the Education Office Astronomy for the Astronomy bachelor's programme at the Faculty of Science at Leiden University.