

Course analysis for *Introductory astronomy for engineers*

Course design and results

Course code	SH1003
Credits	7.5
Course offering	Spring 2021
Teachers	Josefin Larsson (course coordinator, examiner, most lectures) Moszi Kiss (instrument projects and one lecture) Dennis Alp, Felix Ryde and Filip Samuelsson (observing exercises)
Teaching	Lectures (using poll questions with peer instruction) and observing exercises
Examination	Observing exercises (1.5hp), project (2hp), written exam (4hp)
Number of registered students	17
Number of students who passed the course	14 (16 passed some of the credits)

Main changes since the previous course offering

All teaching and examination was done online this year due to the pandemic, with the exception of the observing exercises which were done outside. Based on comments from the students regarding the online lectures last year, the slides were posted on Canvas before the lectures, and the poll questions with answers were added afterwards.

A new observing exercise was introduced this year, which replaces the previous solar observations. The new exercise involves observations of a nearby galaxy with a small telescope.

There have been some improvements to the instructions for the instrument projects.

Summary of the course evaluation

An online course evaluation was sent to all students after the examination had been completed. Two reminders were sent. Five students answered the evaluation. The most important results are summarised below.

Workload and level of difficulty

All students found this reasonable.

Lectures

The students thought the online lectures worked well. As in previous years, the use of poll questions was appreciated, e.g. *“Good. Nice to be forced to stop and think every now and then”*

Projects

All comments about the projects were positive this year, e.g., *“It was a good way to learn about a new topic and shake things up a bit by learning from classmates. Always good to gain experience in public speaking.”*

Observing exercises

Most comments were positive, though there were many complaints about the cold weather. A couple of comments concerned poor image quality, e.g.,

“The telescope observation was a good idea because we have learnt how to calibrate and use a telescope. However, the post treatment of the images was not that good because of the quite bad quality of the image.”

Other comments

“I now understand astronomy much better by knowing HOW we can know things like the masses of stars or the distance to galaxies. Also the cosmology section of the course, since it made me understand the universe better.”

“The grading system is a bit hard since even good grades on several parts cannot compensate an eventual ponctual failure on one part“

Conclusions and plans for the future development of the course

All in all the course worked well also in a fully digital format, though the course coordinator notes that it was harder to get students engaged in discussions online. It is clear that the expectations for the projects are now communicated clearly to students. The teacher responsible for the projects also noted that the reports were of good quality this year. The new observing exercise also worked well, though there is room for improvements.

The following points have been identified as important for the future development of the course

- Develop the new observing exercise further. A new camera should be purchased. It would also be good for the teaching assistants to have a previous, good-quality image available for the students to analyse in case they don't obtain a sufficiently good image during the observations. Also remind students to dress for cold weather.
- The grading scheme for the exam will be reviewed. There was a comment about this in the evaluation and the course coordinator has also previously noticed that there are some instances when the current scheme does not accurately capture the overall performance of the students.
- It is notable that a relatively small fraction of students answer the course evaluation despite multiple reminders. The evaluation could be done earlier, before the exam, which may increase the response rate. There can still be an option to provide additional comments after the exam.