



Report - SD2900 - 2018-08-20

Respondents: 1
Answer Count: 1
Answer Frequency: 100.00 %

Please note that there is only one respondent to this form: the person that performs the course analysis.

Course analysis carried out by (name, e-mail):

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COURSE DESIGN

Briefly describe the course design (learning activities, examinations) and any changes that have been implemented since the last course offering.

The course contains the following:

- Overview lectures and follow-up lectures where hard-to-understand topics are discussed further.
- Teamwork workshops where the student teams work with the project, solve problems to understand the theory better.
- A large engineering project, where the students work in teams.
- Several deliverables during the project: Work Breakdown Structure, Concept sheet, draft paper, peer review, oral presentation, final paper and team check-out.
- A two-hour concept test as an individual written examination.
- An optional oral dissertation to get a higher grade.

In 2017, some new things were introduced:

- More scheduled workshops to simplify the team meetings for the students as this was requested from the students of the class in 2016.
 - Same teams were used for the Fundamentals of Spaceflight and Fundamentals of Flight courses.
 - Trying to divide the groups based on level of ambition, but since all students except one selected "honors" over "passes" level, the ideas did not work.
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THE STUDENT'S WORKLOAD

Does the students' workload correspond to the expected level (40 hours/1.5 credits)? If there is a significant deviation from the expected, what can be the reason?

The students' workload varies from 6 to 32 hours per week, but 42% of the students who filled in the questionnaire said that they work between 15 and 20 hours per week, which would be an expected answer.

THE STUDENTS' RESULTS

How well have the students succeeded on the course? If there are significant differences compared to previous course offerings, what can be the reason?

Most students (over 95%) finish this course the first time, partly because it includes a teamwork project so they push each other to finish the course. Only a few students fail the concept test, but usually complete it at the re-test, which is scheduled in late November or early December, in agreement with the students who failed or for some other reasons were absent at the first test.



OVERALL IMPRESSION OF THE LEARNING ENVIRONMENT

What is your overall impression of the learning environment in the polar diagrams, for example in terms of the students' experience of meaningfulness, comprehensibility and manageability? If there are significant differences between different groups of students, what can be the reason?

The polar diagram shows high values for all questions, which is expected since the course originally was designed to provide a rich learning experience. Hence, the course is very different from a traditional lecture-exercise-written-examination-type of course. Not notable difference in answers between the different groups of students.

The students clearly want more feedback from the teacher on the paper draft and the presentation.

ANALYSIS OF THE LEARNING ENVIRONMENT

Can you identify some stronger or weaker areas of the learning environment in the polar diagram - or in the response to each statement - respectively? Do they have an explanation?

No specific weak areas as seen from the polar diagram. The highest score (6.6/7) was for "The atmosphere in the course was open and inclusive" and the lowest score (5.1/7) was for "I received regular feedback that helped me see my progress". The feedback question got the lowest score also last year, so a better feedback mechanism will be used for the class of 2018.

ANSWERS TO OPEN QUESTIONS

What emerges in the students' answers to the open questions? Is there any good advice to future course participants that you want to pass on?

Some observations from the free text answers:

Lectures: some students like the guest lectures, whereas some think that they steal time away from the core topic of the course, spaceflight dynamics. More example on both spaceflight dynamics, open questions and "back-of-the-envelope" calculations during lectures to prepare both for the project and for the concept test. Some thought that the project management and team building activities the first week was unnecessary.

Team meetings and workshops: more clear instructions from the teacher on how to organise the team meetings, so that the focus is on the right stuff. To minimise the administration, only one meeting minute per week should be submitted. More problems on spaceflight dynamics as preparation for the concept test. More focus on learning Matlab is requested.

Concept test: All equations that will be used on the concept test shall be on the equation sheet.

Recommendations to future students:

- Start early on the project, especially the simulations in Matlab, the final oral presentation and the report.
 - Interact with other team members and
 - Do not skip the guest lectures.
 - Do all previous concept tests.
 - Decide topic for the optional oral dissertation three weeks before and then stick to your selected topic.
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PRIORITY COURSE DEVELOPMENT

What aspects of the course should primarily be developed? How could these aspects be developed in the short or long term?

Prioritized changes for the class of 2018:

- Recommended problems for training in "Rocket propulsion", "Rocket dynamics", "Orbital mechanics" and "Earth satellite operations" will be inserted into the software Maple T.A./Möbius. The problems will be automatically corrected, which gives direct feedback to the students.
 - A check list for the paper will be handed out at the start of the project. The check list will also include transparent grading criteria for the project report. This will allow the teacher to give more feedback on the content of the draft paper.
 - A similar simplified check list with grading criteria for the oral presentation will be handed out to improve the quality of the presentations.
 - A shorter and simple course handbook, with more flowcharts and less text, so make it more understandable for the students.
 - The students will evaluate each other's performance in the project work. The two last year's some groups have had problems with group dynamics in different ways, e.g. freeloaders, and hopefully the introduction of peer-evaluation will provide an incentive to work harder. A mid-term session with open evaluation will be used to learn about peer-evaluation and to test out, before the final closed evaluation. The idea is that the peer-evaluation will affect the final grade of the course, so that the same point system for the (i) concept test, (ii) project and (iii) oral dissertation can be used.
 - Lectures on cost analysis and sustainability aspects will be included.
 - Change the deadlines for the team meeting minutes to once per week.
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Course data 2018-08-20

SD2900 - Fundamentals of Spaceflight, HT 2017

Course facts

Course start:	2017 w.35
Course end:	2017 w.43
Credits:	7,5
Examination:	KON1 - Conceptual Test, 3.5, Grading scale: P, F PRO1 - Project Assignment, 4.0, Grading scale: P, F TEN1 - Optional Oral Dissertation, None, Grading scale: P, F
Grading scale:	A, B, C, D, E, FX, F

Staff

Examiner:	Gunnar Tibert <tibert@kth.se>
Course responsible teacher:	Gunnar Tibert <tibert@kth.se>
Teachers:	Gunnar Tibert <tibert@kth.se>
Assistants:	

Number of students on the course offering

First-time registered:	69
Total number of registered:	74

Achievements (only first-time registered students)

Pass rate ¹ [%]	89.90%
Performance rate ² [%]	102.40%
Grade distribution ³ [%, number]	A 24% (15) B 31% (19) C 24% (15) D 29% (18)

1 Percentage approved students

2 Percentage achieved credits

3 Distribution of grades among the approved students