Report - MJ2424 - 2021-08-03

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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DESCRIPTION OF THE COURSE EVALUATION PROCESS

Describe the course evaluation process. Describe how all students have been given the possibility to give their opinions on the course. Describe how aspects regarding gender, and disabled students are investigated.

Students are encouraged to contact the course leader or other teachers if there are questions or concerns. Some input had been obtained this way. Feedback was also channeled via the involved MSc programs.

No specific actions were taken in addressing issues related to gender or accessibility for students with special needs. However, the course leader completed a course on gender aspects during HT19.

DESCRIPTION OF MEETINGS WITH STUDENTS

Describe which meetings that has been arranged with students during the course and after its completion. (The outcomes of these meetings should be reported under 7, below.)

Meetings were arranged via the SEE Program during the course. Feedback was also obtained from RENE, although no face-to-face meetings between students and instructor were organized.

COURSE DESIGN

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

This course had been organized by Paul Petrie-Repar prior to VT20 (he left KTH in May 2019). The overall structure of the course has been retained. P3 covers key theory required for successfully implementing CFD simulations using commercial software, and serves as a basis for programming of simple CFD problems. P4 involves group projects using ANSYS as a tool. Previously developed lecture material was further refined, including references to an e-book available through KTHB. Home assignments were reviewed and updated, with complete solutions included and support given in class.

For VT21 the lecture material was improved for both MJ2480 (similar course given in HT20) and for the present course round. Additional support on Matlab programming was offered and support for home assignments (before and after submission) was improved. A new CFD group project was added (heat transfer) in addition to the aerodynamics project offered in previous years.

Going in to VT21 there was uncertainty as to if in-class teaching could be allowed owing to the pandemic. In the end all course activities were moved to digital formats. The most significant impact with this adaptation was on the exam. In previous editions the exam was traditional: in-class, paper-based with emphasis on theory. This time a take-home exam was offered that was based on programming done for take-home exams. It was not possible to adapt all the lecturing material to account for this change, thus there was a mismatch between lectures and exam.

THE STUDENTS' WORKLOAD

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

A 6 hp course corresponds to a weekly workload of approximately 11 hours (assuming 14 weeks active study throughout the semester). Most students reported working at this level although 20% of the respondees indicated workloads of 15 hours/week or higher. This is most likely linked to inexperience in programming.

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?

Students performed satisfactorily on the home assignments and exam and very good on the CFD projects. The oral confirmation following the exam allowed for a one-on-one check on student performance. During these 15 minute sessions it was possible obtain a reasonable idea on student engagement in the course, most notably on programming of CFD calculations. Here it was found that virtually all students had made solid attempts at programming, with many excelling in this task. The take-home exam format appears to have made a positive contribution towards achieving the intended learning outcomes.

STUDENTS´ANSWERS TO OPEN QUESTIONS

What does students say in response to the open questions?

The responses were broad, which is partially linked to prerequisite knowledge. Some frustration was evident in terms of mismatch between lecture and home assignment/exam content along with an incident with the take-home exam (error in exam paper which caused extra work). Many of the respondees had difficulty in applying previously taught knowledge (fluid mechanics, programming). Uneven experiences with the CFD project were evident: positive experiences with the established aerodynamics problem but many negative responses for the new problem involving heat transfer. Home assignments were viewed positively even if they involved a relatively high workload.

SUMMARY OF STUDENTS' OPINIONS

Summarize the outcome of the questionnaire, as well as opinions emerging at meetings with students.

In general evaluation results were improved across all categories as compared to VT20. In general respondees showed a neutral to positive response to most questions.

The three main strengths of the course (scores 5.3-5.9): (1) I worked with interesting issues; (16) The assessment on this course was fair and honest; and (21) I was able to learn by collaborating and discussing with others.

The three main weaknesses of the course (scores 3.6-4.0): (7) The intended learning outcomes helped me to understand what I was expected to achieve; (10) I was able to learn from concrete examples that I was able to relate to; and (17) My background knowledge was sufficient to follow the course.

OVERALL IMPRESSION

Summarize the teachers' overall impressions of the course offering in relation to students' results and their evaluation of the course, as well as in relation to the changes implemented since last course offering.

The programming-based problems from the home assignments carried much more weight in this course round as these problems were a basis for the take-home exam. Theoretical topics linked to these assignments remain critical but there is scope to improve the presentation of these topics in lectures, including more emphasis on practical issues linked to CFD programming. Home assignment support, which was strengthened for VT21, was appreciated.

ANALYSIS

Is it possible to identify stronger and weaker areas in the learning environment based on the information you have gathered during the evaluation and analysis process? What can the reason for these be? Are there significant difference in experience between:
- students identifying as female and male?
- international and national students?
- students with or without disabilities?

New MSc students (mostly international students) were much more critical of this course, which is related to the diversity of backgrounds with programming of particular relevance.

No significant differences could be seen in terms of gender or special needs.

PRIORITIZED COURSE DEVELOPMENT

What aspects of the course should be developed primaily? How can these aspects be developed in short and long term?

Priorities for VT22:
-- communication with SEE Program to check if Matlab or other programming can be introduced during HT21, or that students can be made aware of need for such skills
-- revamping of lecture material to emphasize key topics for CFD programming, with links to textbooks (CFD and numerical methods)
-- close examination of project on heat transfer

Note that this course is slated to be phased out after VT22. The module taught in P3 (theory and CFD programming) to be included in a new elective course on numerical heat transfer.

OTHER INFORMATION

Is there anything else you would like to add?

The shift to take-home exams was seen as an improvement in terms of achieving the learning outcomes. This format will be retained in MJ2480 and future editions of MJ2424/MJ2444 and its follow-on course in numerical heat transfer.