Course analysis: MJ2381, Introduction to Energy Systems Analysis and applications (Minor course), VT25

Changes made since previous course offering

We collected a long list of changes and improvements from the previous edition of the course (VT24), as usual, both from the teachers' experience and from the students' feedback. Main changes:

- Noticing the stress and poorer performance on the assignment concerning the structure of OSeMOSYS, we moved it to AFTER the assignment where students build a simple model. It became HEM2. We also linked the questions in HEM2 to inputs and exercises of the previous assignment, for continuity and better understanding.
- For fairer evaluation of individual contributions in the group work, reduced workload for report writing and deeper learning (with decreased risk of unethical use of AI in writing), we changed the whole TEN1 assessment into an individual oral exam (based on the group work, but largely independent from its results).

We increased the number of tutoring sessions scheduled on the students' calendars, to allow for better planning.

Compilation of course evaluation results (required)

Aside from the final course evaluation, we also asked for the course to nominate two course representatives and we designed two intermediate surveys with them, to capture hiccups and anything that may be corrected during the course. The responses did highlight the need for some small course corrections, which we implemented.
In general, from the evaluation it seems that the students appreciated the course structure and that the latter supported their learning in the way that was intended. That was one of the main outcomes sought with the changes compared to previous years. There is much less negative feedback on the tools and user interfaces used compared to previous years, signalling that their development has reached a stage which properly supports learning. There is also appreciation of the possibilities of engagement with the teaching staff and the Q&A sessions, both scheduled, in the labs, and via bilateral communications.
However, there are also some aspects felt as needing improvement:

- The overall load is perceived as high by a few of the respondents. There is some specific indication that TEN1 requires more effort than indicated by 3 HP. Our interpretation is that this may feel particularly the case if group work is unbalanced. But it may also be due to poor communication of the expectations on the necessary level of commitment.
- There is mixed feedback regarding the uniformity of the support received by the teaching staff, in terms of thoroughness of feedback and alignment of expectations. Some students praise it as very good, some disagree.

Some feedback on how to improve on more minor (but potentially very effective) practical parts is given:

- A student suggests giving the possibility of modelling without using the interface;
- Two students suggest giving more guidance on how to extract specific results from the interface.

Finally, it must be noted that the rate of response is quite low (22%), so the above comments may not reflect well the average feeling about the course. Additionally, some of the students having the strongest concerns voiced an overall high level of stress due to high workload through the programme, especially in some moments. This calls for a better distribution of load across the programs, during the terms.

Course coordinator's reflections on what has worked well and what can be developed in the course

In general, there is a clear improvement of the quality of learning by the students compared to previous years (visible both through formative and summative assessment). This is particularly evident in HEM2. The performance on the individual oral exam was on average excellent, despite the students not being used to that form of examination.

We also consider a great success that the students themselves feel this: aside from some concerns, they mostly agree on that the course is well structured and supports the learning.
We need, however, to work on spreading the effort better across the whole semester, in particular reducing the load in May. The students did appear stressed and this did show in their assignments and performance.
An additional remark is that a significant number of students seems to confuse physical units, or be unsure about them, resulting in important mistakes in the presentation of results in the assignments. This shows a lack of understanding and affected the grades.

Summary of changes to be introduced for the next course (required)

Based on the VT25 students' feedback and on our evaluation, we will operate the following major changes:

- Redistribute the workload and assessment throughout the term, to reduce the load in May and the overlap with other courses in the programme;
- Reduce the writing load in the home assignments, introducing different ways to assess the learning.

We will also introduce the following minor changes:

- Open the possibility for students to do the modelling not using an interface;
- Improve the guiding material for the modelling assignments, especially in the parts regarding how to extract and visualise results;

Introduce classes (or parts of classes) to refresh the knowledge on physical units and to practically demonstrate key aspects of the use of OSeMOSYS as a tool for energy systems analysis.