

Course analysis for the course ML2301 Production Management and Development

0. When the course was completed: January 12th, 2024

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1. Describe the course evaluation process.

The students can give their opinions on the following occasions:

1. In the introduction of the course, the students provide input about their expectations in the course through a Menti survey.
2. During the lab session, at the end of the session day, they got the chance to reflect on the practical activities, and how they connect to the course and improvements to enhance the learning experience of future students. The teacher in the session shares this input with the course responsible.
3. During the course conclusion. The students are asked openly to share their suggestions about the course.
4. During LEQ evaluation. The LEQ was sent out after the students had their written exam.

JML is given priority in the selection of teachers and guest lecturers. The core teaching team consists of 50% female and 50% male members, with both the course responsible and the examiner being female. Among the guest lecturers, 70% are male and 30% are female. While there is encouragement to increase the representation of female guest lecturers, it is not considered a top priority for course development. This decision is informed by the existing high cultural diversity among the researchers and teachers involved in this course.

2. Description of meetings held with students.

- Meetings organized by the responsible for the Master's program for student representatives during the first half of the course (Fall) and after the course had ended (Spring). As every year, the whole staff also involved in the master's program had the opportunity to reflect on areas of improvement for the program and courses; for this particular course, the teachers incorporated what was possible for the upcoming sessions in the running course, considering the resources i.e. teaching hrs were reduced.
- Course conclusion meeting, with open discussion and sharing reflections.
- Open communication in CANVAS - course discussion section, email, and allocated tutoring meetings in connection to project work INL1. The students share their concerns and opinions (about the course and project) directly with the course responsible.

3. Course structure

The course was delivered in diverse formats, including lectures, group discussions, seminars, workshops, and a lab session (split in two due to the total number of students). It is evaluated with a written exam (individual, digital canvas) and project work (team).

Guest lectures were held on selected topics. Most of the lectures, seminars, and lab sessions were planned to be conducted on-site. If students notified the teacher on time that they could not attend on-site due to being sick, the opportunity to join digitally was offered upon the teachers' acceptance. Same as the previous year, we applied "course rules" (published on the course page from the start of the course) as a guide to decision-making in diverse situations. In this way, students and teachers know how to proceed, and how requests are handled becomes transparent.

Concerning development, the course coordinator, along with the teachers and examiner, determined that a workshop session this year was unnecessary. This decision was made based on the ongoing development from the previous year, and each party is already aware of their respective focus areas for improvement.

Examining part (with points):

INL1 (A-F, 5hp). Group assignment.

TEN1 (A-F, 4hp). A written final exam to assess theoretical understanding. Closed book exam, digital in Canvas.

Main implemented changes since the last course offering connect to TENTA1 format, supervision sessions in project work, and revision/update of material by each teacher in their sessions.

4. The students' work effort time in relation to credits

The responses in the LEQ indicated highly varied efforts from students, i.e., 18-20 hrs (1 student), 15-17 hrs (1 student), and 9-11 hrs (1 student). Most of the students answering the evaluation reported less work time than expected. This course is nine credits and an expected total time 240 hrs.

The comments regarding workload are positive, e.g., the students consider that given the credits, the workload is okay and can be accepted. This has improved significantly in the past two years. Still students have different opinions regarding the assigned reading material. Some comments from students refer to not being able to meet the requirements on reading and deciding to miss sessions sometimes; such comments are contradictory to the workload question. Students find it challenging to manage their preparations during the course when they have multiple courses back-to-back on a given day. For this course, we have continued marking readings and preparations as "mandatory" and "recommended" to provide a guide to students.

5. Students' results

All students who took the exam have successfully passed the course. As of this analysis, one student has yet to complete the final exam and project, citing a personal decision for this delay.

The lowest grade in TENTA1 is D (2 students), and the lowest grade in INL1 is C. Final grades in the course range from B to C. This year's number of students was 21, with students coming from a mix of programs. In the final grading, 24% of students achieved a B, 71% received a C, and one student is still pending evaluation. This variation in grades is linked to the efforts invested by students in their project work. In comparison to the previous year, the overall quality of project work, including presentations, was lower, resulting in no team achieving an A grade. Notably, students demonstrated an improved performance in the exam, which can be attributed to the adoption of a new format. This year, we opted for an open-book, case-based exam.

6. Answers to open-ended questions

The following are the key aspects expressed by the students:

- The pedal car factory lab was regarded as the best aspect of the course, e.g., interesting and stimulating.
- A student highlighted the discussions on models as one of the best aspects of the course.
- A student suggested reducing or shortening the reading in all lectures.
- A student suggested including tools like VSM and Green performance map in the exam. However, the respective ILOs are evaluated in the project work.
 - Among the recommendations to fellow students is to be on-site and review the material.
 - In the held discussions, students expressed that they find the course interesting and essential for the future.

7. Summary of students' opinions

The response rate of the LEQ was 3/21, compared to the past two years.

A higher rate would be preferable to be able to triangulate the feedback from students' meetings.

Feedback received during supervision sessions with students has been generally positive. Many students have expressed concerns about on-site sessions via email, preferring online alternatives. Similar to the previous year, there has been a noticeable increase in requests for digital attendance, indicating a preference for this mode of participation.

An interesting observation is that students have shown increased diligence in submitting complementary assignments when unable to attend mandatory sessions. However, there have been numerous requests for rescheduling due to clashes with other programs. Despite raising this issue early in the planning process, it appears that requests from our course are being overlooked, possibly due to the course responsible(s) in other programs not acknowledging the clashes (feedback from scheduling team). This oversight is both concerning and time-consuming for both teachers and students. To accommodate such scheduling challenges, we maintained flexibility where possible. For instance, in supervision sessions and team activities, if one team member had a scheduling conflict, their teammates could represent the rest of the group. However, for non-mandatory sessions, we noticed instances where students missed several sessions.

During the program meeting, student representatives provided positive feedback about the exam format, which was encouraging for us. The rationale behind changing the exam type was to mitigate plagiarism concerns, given the growing use of AI tools. Consequently, we decided on a comprehensive open-book exam centered around a detailed case study.

8. Overall impression

Teachers acknowledge that there are ongoing improvements to be made in the course as part of the Master's program, and we are committed to collaborative and continuous development with the teaching team. We highly appreciate students' active engagement in discussions, and the diverse multicultural background within the class is seen as an asset, contributing positively to the overall course environment. This year, we noticed some fragmentation in student collaboration, which may be linked to lower performance in team tasks.

9. Analysis

The course continues to evolve by incorporating improvements each year. In the previous years, we consistently observed a trend where the highest-performing students were from our program compared to students from other programs. However, this year marked a shift in the trend; the performance was more mixed, and in certain sessions, we noted the highest engagement from students in other programs. The group was exceptionally diverse and international, and sessions involving practical activities, open discussions, and guest lectures were particularly well-received.

As we look ahead, there is room for re-designing some of the teaching occasions. For example, considering the positive feedback from the newly tested exam format, we could incorporate case-based discussions into other sessions, similar to the approach taken with the Danfoss case in the Manufacturing Footprint session.

10. Priority course development

In the short term, attention should be given to the following aspects:

- Review the alignment of concepts among all teachers, incorporating the improvements/changes that each teacher introduces annually. This also involves adapting to the diverse backgrounds of students enrolled in each course round, customizing content accordingly, and determining the depth at which topics should be explained.
- Ensure that the rotation of teachers during this period does not compromise the quality of the session(s) by verifying course content during development.
- Keep the supervision process streamlined; in the current round, we had fewer hours available (one teacher less), and a structured agenda for each session proved effective. However, it is important to note that the workload intensifies for a single teacher and examiner. This could be exacerbated if the number of students increases, leading to a higher number of student groups in project work.
- Disperse reading assignments throughout the course, prioritizing them appropriately with the inclusion of new teachers. If feasible, cross-check with the ML2305 course for potential clashes in tasks such as presentations and final project delivery dates.
- Following this year's revision of the exam format and considering feedback from both students and teachers, it is recommended to maintain the open-book and case-based structure. As an improvement, consider setting character limits for questions that don't require extensive answers. This year, a standard of 400 characters for all questions was established; however, it was noted that some students felt compelled to reach the maximum limit even when not necessary. Implementing specific character limits for relevant questions can streamline the grading process without compromising the assessment's value.

In the long term the focus could be on the assessment tasks:

- Reevaluate the project work assignment, considering the potential benefits of revising both the project topics and format. This could enhance student engagement by incorporating other contemporary themes or industry challenges.

11. Other information