Case description:

Across the globe, most of the preeminent universities offer open online assistive learning services. Many instructors in higher education and training organizations are implementing video lectures in a variety of ways, such as broadcasting lectures in distance education, delivering recordings of in-class lectures with face-to-face meetings for review purposes, and delivering lecture recordings before class to conserve class time or at the extreme to flip the day for hands-on activities. All these open learning resources depend on different underlying technologies offered by different uncoordinated parties, hence, the ecosystem of available digital content and solutions constantly evolves. The reuse of open videos and materials will not happen only within a course, but also across other courses and learning activities within and across universities.

To be prepared for this change, NTNU wants to digitize its teaching processes as much as possible. This includes the whole chain from study program and course design, preparation of individual courses by the teacher, making the curriculum available, lecturing, giving exercises and grading exams/exercises/projects, to the possibility of complaining by students about their grades.

At NTNU the main sub-processes are currently handled in different ways, ranging from manual (grading exams) to supported by information systems (complaining). Important systems for supporting the teaching process, are: Innsida, EksamensWeb, Studentweb and Blackboard. Other systems exist also. Your task is to:

- Analyse how these sub-processes are handled by the existing information systems and what functionality is available to aid the staff and students in these tasks (the AS-IS situation).
- Describe a new way of organizing the teaching process, by introducing new information systems, or changing the existing systems by improving the functionality, in particular in the light of the developments pointed to in the introduction (The TO-BE situation).
- Justify your choices and explain, describe and model your ideas.
- Analyse problem areas around your own design and discuss potential security problems

In the work, make sure to relate to and use material from the syllabus, e.g. to types of IT-systems discussed in Stair and Reynolds, and to techniques for (process) modelling and requirements specifications lectured in the course.

A description of NTNU teaching processes can be found at, among others, the following places:

- https://innsida.ntnu.no/undervisning
- https://innsida.ntnu.no/studier

An overview of current activities relative to innovative education at NTNU is found at:

- https://www.ntnu.no/wiki/display/ppfntnuit/-Innovativ+utdanning (only in Norwegian).
- See e.g. http://link.springer.com/chapter/10.1007/978-3-642-37285-8_10 for a description of different LMS's and how a learning ecosystem platform can integrate them.

This is an information systems course with focus on analysis and modelling. In order to understand how e.g. Blackboard, StudentWeb and EksamensWeb works you do not need to have access to the code.

Final Deliverable

You will work in groups of 5-6 students. The final deliverable will be a report that describes how the teaching process at NTNU can be made more innovative by the use of ICT. The report must contain the following sections/chapters:

1. **Executive Summary** – Describe the problem and summarize the TO-BE situation as proposed by the group (max 1 page).

2. **Background** – Give an overview how the use of ICT in learning has changed/is changing academic education (approx. 4 pages).

3. **Teaching at NTNU: the AS-IS situation** – Describe the AS-IS situation. In order to control the seize of this description, it must be a two-level one. First, describe the overall teaching process by means of an BPMN model that distinguishes the main sub-processes. Then, choose two or three sub-processes that the group wants to focus on in the improvement/innovation effort. Expand these sub-processes into more detailed models and indicate where and how computer-based information systems are used in the current situation. Models must be explained where needed (approx. 6 pages, including the models)

4. **Teaching at NTNU 4.0: the TO-BE situation** – Describe the TO-BE situation by detailing how the sub-processes the group focuses on will change due to the new or changed use of information technology. New or changed functionality must be properly described. Also, it should be indicated by new BPMN models how the sub-processes change. (approx. 6 pages, including the models).

5. **From AS-IS to TO-BE** – Describe an implementation plan that turns the AS-IS situation into the proposed TO-BE situation. Identify also the main risks that can jeopardize a successful use of the new solution, and how you propose to deal with these. Well known risks are security and resistance (people refuse to use the system). But there are definitely others. (approx. 5 pages)

The page indication is just to give you a hint about the size. We expect reports of approximately 25 pages, all included. But it is fine to deliver a report with less or more pages than that.

As part of the project you will be able to submit parts of the project prior to the deadline where the TAs will provide you with feedback. There are on the following dates:

- October 3rd: Case(s) identified by the group. Provide the identified problem(s) and a short description of what the perceived problem is. You do not need to provide a solution, although one can be provided.
- October 17th: A no more than five page draft of you report. You can also provide any BPMN models you have created to the project. Add comments where you have questions regarding your draft.

None of these two deliveries are mandatory. Only the final delivery which has a deadline on November 17th is mandatory.