Course analysis template

After the course has ended, the course leader fills in this template.

Course code	Course title	Credits
5HI001	Computer Applications in Health Care and Biomedicine (10hp)	10
Semester	**Period**	
1	2	

Course leader	Examiner
Stefano Bonacina	Stefano Bonacina
Other participating teachers	**Other participating teachers**

Number of registered students	Number passed after regular session	Response rate for course survey (%)
48	47	52.08 %
Methods for student influence other than course survey Feedback and comments on the schedule and the agenda, while the course is running.		
How will the results from the course analysis be communicated to students The course analysis will be published on the course website on Canvas and submitted to the Board of Education at LIME Department.		

1. Description of any implemented changes since the previous course

In the HT25 iteration of the course, the main topics were delivered through lecture sessions followed by one or more in-class exercise sessions organised as group work. Subsequently, Individual Assignments 1 and 2 were revised to allow students to address similar exercises independently, thereby reinforcing individual learning and knowledge consolidation.
For the modelling of production rules based on clinical practice guideline recommendations, different recommendations were assigned to different groups to stimulate richer discussions and comparative analysis. In addition, proposed solutions for conceptual modelling using Unified Modeling Language (UML) class diagrams were reviewed and discussed in plenary sessions.
Compared with previous course iterations, the requirements for the individual assignments were adjusted and the accompanying instructions updated to improve clarity and alignment with the course learning objectives. Two lectures were added focusing on Healthcare Infrastructure and Cybersecurity and on App Development and Publication in App Stores, respectively, to strengthen the course's coverage of contemporary and practice-oriented topics.
Group projects focusing on Public Health Informatics were presented through oral presentations, which were complemented by structured and engaging class discussions.

2. A brief summary of the students' evaluations of the course

(Based on the students' quantitative answers to the course evaluation and comments. Quantitative compilation and possible graphs attached. Enclose results from the course evaluation)

Twenty-five (25) of the 48 enrolled students completed the course evaluation survey. Of the respondents, twenty-three reported a clinical or medical education background, while two reported a technical education background. For each survey question, the mean, standard deviation, and coefficient of variation (expressed as a percentage) are presented in Table 1.

The mean values of the responses range from 4.9 to 5.8, indicating overall positive ratings across the survey items (Table 1). The standard deviation varies between 0.4 and 1.2, suggesting modest variation in responses. Likewise, the coefficient of variation ranges from 6.4% to 22.9%, pointing to a generally consistent pattern of responses, although some variability is observed across questions. These results suggest broadly favorable student perceptions, while also indicating areas where experiences and opinions may have been more heterogeneous.

Table 1. Mean, standard deviation and coefficient of variation for questions of the survey.

#	Question	Mean	Standard Deviation	Coefficient of Variation (%)
1	The course was designed in a way that provided me with opportunities for active learning.	5.4	1.2	21.4
2	I felt included and respected during the course.	5.8	0.4	6.4
3	The course as a whole was good.	5.1	1.1	22.1
4	Teaching was based on real examples to develop students' professional knowledge.	5.4	0.8	15.1
5	My previous knowledge was sufficient to follow the course.	4.9	1.0	19.9
6	The course was challenging enough for me.	5.0	1.1	22.9
	Average	5.3	0.9	18.0

3. The course-responsible reflection on the course implementation and results

The course addresses the structure, functionality, and use of information systems and computer applications in healthcare, including medical record systems, clinical decision support systems, consumer health applications, and telemedicine solutions. Computer applications in heterogeneous settings within Clinical Informatics, Consumer Health

Informatics, and Public Health Informatics are examined, with consideration given to interoperability as well as organizational, ethical, and legal aspects.
The course was delivered through a total of 32 sessions, of which nine were led by guest lecturers, including international contributors. Guest lecturers represented healthcare organizations, a company specializing in clinical decision support systems, and other departments within Karolinska Institutet. Their contributions provided valuable practical and interdisciplinary perspectives that complemented the core course content.
Overall, the implementation of the course was satisfactory. At the same time, student feedback identified several areas for further development, which will be addressed in future course iterations.
Regarding student performance, 14 students were awarded the grade A, 21 students received B, 11 students received C, and one student received D. A re-examination was required only for Individual Assignment 2.

Course strengths:

1. Practical relevance and real-world application
2. High-quality, well-structured content
3. Meaningful group work
4. Supportive, knowledgeable teaching
5. Engaging and interactive teaching methods
6. Valuable guest lectures

Course weaknesses:

1. Assignment clarity and structure
2. Intentional group formation and task design
3. Time management and workload balance
4. Reducing repetition in presentations

4. Other comments

-

5. The course-responsible conclusions and any proposals for changes

(If any changes are proposed, please specify who is responsible for implementing these and a time schedule.)

In Table 2, reflections on weaknesses and proposals for changes are presented. Responsible for changes is the course director.

Table 2. Reflections on weaknesses and proposals for changes

#	Topic/short summary	Teacher reflections	Actions for improvement
1	Assignment clarity and structure	Student feedback highlights a perceived need for simpler and more explicit assignment instructions, including clearer expectations, templates, and earlier release of assignments. From the course perspective, assignment instructions necessarily include technical concepts that are introduced progressively and may not yet be fully familiar to students at the time of publication. To support students, editorial guidelines and clearly defined assessment criteria are already provided, specifying both expectations and evaluation focus. Furthermore, the timing and complexity of assignment release have been intentionally aligned with the evolving level of the class, which can only be adequately assessed as the course progresses. Nevertheless, the feedback indicates that, despite these measures, some students experienced uncertainty regarding scope and focus.	In future course iterations (HT26), assignment instructions will be further reviewed to improve clarity and readability, particularly by explicitly indicating which technical concepts are expected to be mastered at the time of assignment release and which are exploratory. Assessment criteria and editorial guidelines will be more prominently referenced within the assignment descriptions to support student navigation. While maintaining flexibility to adapt assignment complexity to the cohort's level, the teachers will explore the possibility of providing preliminary assignment outlines earlier in the course, allowing students to better anticipate upcoming requirements while preserving pedagogical adaptability.

2	Intentional group formation and task design	Student feedback regarding group work highlights important pedagogical considerations related to collaboration, diversity, and learning efficiency. The suggestion to form groups at instructor level is well aligned with the intention of exposing students to diverse perspectives and working styles. In the current course iteration, allowing students to self-select groups was intended to lower initial barriers to collaboration; however, this approach may have unintentionally limited opportunities for cross-disciplinary and intercultural exchange. Students' request for clearer guidance on how to work as a group suggests that, while group activities were central to the course, expectations regarding roles, processes, and deliverables may not always have been sufficiently explicit. The assumption that students would self-organise effectively may not hold equally for all cohorts, particularly in interdisciplinary or international settings. Finally, the perception of redundancy arising from multiple groups addressing identical tasks points to a tension between reinforcing learning through repetition and maintaining engagement at class level. While observing multiple solutions to the same problem can be pedagogically valuable, excessive repetition may reduce attention and perceived efficiency.	For future course iterations (HT26), group formation will be reviewed with the aim of introducing instructor-formed groups to promote diversity and collaborative learning. Clearer guidance on group work will be provided by outlining expectations regarding roles, working processes, and deliverables at the start of each group activity. To reduce redundancy and enhance engagement, group tasks and presentation formats will be redesigned where appropriate, for example by assigning different sub-tasks to different groups or by adopting a workshop model in which selected groups present solutions for structured class discussion.

3	Time management and workload balance	Student feedback indicates that the course structure, particularly the length of lecture days and presentation sessions, at times led to cognitive overload and reduced learning effectiveness. The use of extended teaching days was initially motivated by logistical considerations and a desire to create coherent thematic blocks; however, this approach appears to have limited students' ability to maintain concentration and to engage deeply with the material over time. Concerns regarding timekeeping during presentations further point to issues of pacing and fairness. While allowing discussions to continue beyond allocated time was intended to support engagement and dialogue, it may have inadvertently contributed to fatigue and reduced learning efficiency, as well as uneven time distribution between groups. Finally, students' request for more time for self-study and reflection suggests that the current intensity of scheduled activities may limit opportunities for consolidation of learning.	For future iterations of the course, the overall scheduling will be reviewed with the aim of reducing long continuous lecture days by splitting sessions across multiple days where feasible. Greater emphasis will be placed on strict timekeeping during presentations, with clearer moderation to ensure that allocated time limits are respected, and discussions are concluded when time is exceeded. In parallel, the course structure will be adjusted to allow additional time for self-study and reflection between teaching sessions, supporting more effective consolidation of learning and reducing cognitive overload.

4	Reducing repetition in presentations	Student feedback indicates that presentation sessions were experienced as repetitive when multiple groups presented on the same or very similar topics. While the original intention was to enable students to compare different approaches to the same problem and benefit from repeated exposure, this format appears to have reduced engagement and attention over time. Students' preference for workshop-based formats with shared discussion highlights a desire for more active and focused collective learning, where presentations serve as a starting point for dialogue rather than as repeated reporting of comparable content. Furthermore, the request for greater variety across presentations points to the need for clearer differentiation of group tasks, allowing students to engage with a broader range of perspectives, methods, or applications within the same thematic area.	In future course iterations (HT26), the design of presentation activities will be revised to reduce redundancy and enhance engagement. The number of groups presenting on the same topic will be limited, and where appropriate, group tasks will be differentiated to ensure greater variation in content and perspectives. Workshop-based formats will be increasingly adopted, in which selected groups present specific aspects or solutions that serve as a basis for structured class discussion. This approach aims to promote more concise, focused, and engaging presentation sessions while maximising learning value for the entire class.