

Principles for varying exam questions

Target group

Course coordinators, academic staff responsible for exams, chairs of boards of examiners etc. at the Faculty of Health Sciences, Aarhus University

General

The quality of exams relies on a set of general criteria, which include exam *validity*, the *practical manageability* of exams, and whether exams are *acceptable* for students, examiners, co-examiners and the prospective employers of our graduates. In addition, these criteria must be weighed against the *cost* of developing the exam. In practice, the criteria are interdependent, and the formal framework and format of each specific exam therefore have a bearing on the level of quality that can be achieved.

<https://kvalitet.au.dk/aarhus-universitet/studieordninger-paa-au/centrale-elementer-i-en-studieordning/proeveform>

The validity of exams is influenced by many factors, but above all by the extent to which the exam adequately reflects the course content as described in the academic regulations and as implemented in the teaching. Exams should be comprehensive and generally cover as wide a range of topics as possible. At the same time, exams must reflect the intended learning outcomes as regards the knowledge, skills and competences to be acquired by students. The validity of an exam and thus the quality of the exam practices of a degree programme also depend on the variation of exam questions from one exam to the next.

Most of the learning outcomes defined for university degree programmes relate to knowledge and understanding of the theory and methodology of the various subjects as well as the application of this knowledge to tackle real-life problems. However, a large number of the degree programmes taught at the Faculty of Health Sciences – such as medicine, dentistry and sports science – also include specific practical skills relating to the performance of clinical procedures or motor skills, and where the variation of exams must therefore be viewed in a broader perspective.

There is therefore a need for guidelines on the variation of exams to ensure both their validity and practical manageability. The framework described is intended as a tool for this purpose and is designed as a set of minimum standards which, to a large extent, reflect current practices on the faculty's degree programmes.

Variation of exam assignments

Exam questions from previous exams must not be reused. The course coordinator is responsible for ensuring that this does not happen as the reuse of exam questions may necessitate a reexamination.

However, where appropriate, variations of previous exam questions may be used. Variations can take the form of even slight changes to an exam assignment, which in practice will mean that the examinees are faced with a new situation compared to the earlier version of the assignment. Slight changes may mean that the examinees must apply other/perhaps new knowledge or methods compared to previously, or other variations of skills or competences, or that their reasoning may be different, or that the correct answer is different compared to earlier versions of the assignment. It is important that those responsible for designing exam assignments consider the academic arguments as to why this is, in fact, a sufficiently new situation for the examinees compared to the earlier versions of the exam.

In certain cases, the course content is highly standardised, and it is not possible to vary the exam questions infinitely. This is the case when testing, for example, specific, standardised knowledge or skills (e.g. resuscitation), which it is important that all examinees are able to perform. In such cases, it may make sense to reuse certain parts of the exam assignment. There may also be times when the materials used as the starting point for an exam are limited. Examples of this are anatomical specimens or manikins for OSCE exams (OSCE = Objective Structured Clinical Exam). However, in such cases, sufficient variation between individual exams can be ensured by building up a bank of exam assignments and randomly selecting new questions from the bank each time.

However, in connection with such reuse, three conditions must be met in order to ensure the quality of the exam. *Firstly*, you cannot reuse parts of exam assignments until a sufficiently large bank of exam assignments has been established. *Secondly*, an exam assignment must never be identical to an exam assignment that has been used previously. *Last but not least*, aids are **not** permitted for this type of exam. If aids are permitted during the exam, all exam questions must always be new.

Matrix of forms of examination and variations

The matrix below sets out general principles for varying exams and is based on the forms of examination typically used at the Faculty of Health Sciences. Please note that the matrix provides examples of 'what is typically assessed' by the various forms of examination (column 3) and therefore may not cover all eventualities; furthermore, some exams combine several different forms of examination.

The examples of what is typically tested are based on the Danish Qualifications Framework, which can be found at: <https://uvm.dk/ministeriet/uddannelsessystemet/den-danske-kvalifikationsramme/>. In this context, competences are understood as something that the learner can acquire through authentic, first-hand, complex, unpredictable and development-oriented situations in study and/or work contexts. Take-home assignments, projects and so on, based on such situations, can therefore assess competence.

Competence is therefore not understood as the ability to handle or manage a 'hypothetical' situation solely at the theoretical level.

Some of the existing exams may be combinations of the forms of examination listed below or variants thereof; therefore, those responsible for an exam must consider which of the exam formats described below their exam is based on or has the most in common with.

Form of examination	Description	What is typically assessed – examples	Guidelines on reuse
Essay	Long written on-site exams with a few major questions and long open-ended answers	Knowledge Theoretical/methodological and practical skills Written communication	Topics or questions/angles or content (e.g. case studies, articles etc.) must be varied from one exam to the next.
Short-answer	Written on-site exams comprising several (e.g. >25) short questions and short open-ended answers (e.g. 1–50 words per answer)	Knowledge Theoretical/methodological and practical skills Written communication	<i>Without aids:</i> In case of banks of exam assignments containing at least 200 exam assignments: A maximum of 15% of the questions in an exam assignment may be the same as those used in earlier exam assignments. <i>With aids:</i> All questions must be new/not reused.
Multiple-choice exam	Written on-site exams with many questions and pre-formulated options	Knowledge Possibly theoretical/methodological and practical skills	<i>Without aids:</i> In case of banks of exam assignments containing at least 500 exam assignments: A maximum of 15% of the questions in an exam assignment may be the same as those used in earlier exam assignments. <i>With aids:</i> All questions must be new/not reused.
Take-home assignment	Written assignment comprising a few/several questions and long open-ended answers, to be completed at home	Knowledge Theoretical/methodological and practical skills Written communication Possibly competences	Topics or questions/angles or content (e.g. case studies, articles etc.) must be varied from one exam to the next.
Spot exam	Written or oral on-site exam comprising a few or several questions about specimens and the like	Knowledge	Specimens may be reused, but must be selected at random from the specimen bank on each occasion.
Oral exam	Theoretical on-site exam involving an oral response to one/more questions, which are not assessed independently	Knowledge Theoretical/methodological and practical skills Oral communication	Topics or questions/angles or content (e.g. case studies, articles etc.) must be varied from one exam to the next.

Project	Written assignment comprising a few/several assignments and long open-ended answers, to be completed at home	Knowledge Theoretical/methodological and practical skills Written communication competences	Topics <i>or</i> questions/angles <i>or</i> content (e.g. case studies, articles etc.) must be varied from one exam to the next.
Practical exam	Practical on-site exam comprising a few/several tasks, which are not assessed independently of one another	Practical skills, oral communication Possibly competences	Topics <i>or</i> questions/angles <i>or</i> content/case studies should be varied from one exam to the next.
Long case	A long practical clinical on-site exam involving a single case and an authentic patient	Knowledge Clinical skills Oral communication Competences	Topics <i>or</i> questions/angles <i>or</i> content/case studies should be varied from one exam to the next.
OSCE	Practical clinical on-site exam comprising several short tasks (stations) involving, for example, simulated patients, which are assessed independently	Practical/clinical skills Oral communication	The simulation material may be reused, but the topics <i>or</i> questions/angles <i>or</i> content <i>or</i> case studies must be varied each time. In case of banks of exam assignments containing at least 200 exam assignments: A maximum of 15% of the questions in an exam assignment may be the same as those used in earlier exam assignments.
Logbook, portfolio, 'course certificates' and the like	Compilation of documentation of competences acquired during internships or clinical placements	Practical/clinical skills Written communication Competences	Documentation is, by definition, unique, individual and context-specific.
Thesis/thesis project/ Bachelor's project or the like	A major/long written research assignment to be completed at home	Knowledge Theoretical/methodological and practical skills Written communication Competences	Reuse of previously used subject areas is acceptable, but research questions must be new/not reused.