# Examination Matrix Format - Board of Examiners IDE

(August 2018)

The format for this matrix is based on Blooms taxonomy[1]. This taxonomy is frequently used in a variety of institutes of Higher Education; it is also part of the UTQ courses for teaching staff of Delft University of Technology.

| A. | Course name and code: |
|---|---|
| B. | **Description of both, formative and summative assessment parts (please, mark formative parts with \*)**:<br>**Exam[2]1:**<br>**Exam 2:**<br>**Exam 3:** |

| C. | **Exam is devised by**:<br><br>**Exam 1:**<br>**Exam 2:**<br>**Exam 3:** | D. | **Exam is assessed by:**<br><br>**Exam 1:**<br>**Exam 2:**<br>**Exam 3:** |
|---|---|---|---|

| E. | **Matrix** | **Remember** | **Understand** | **Apply** | **Analyse** | **Synthesise** | **Evaluate** | |
|---|---|---|---|---|---|---|---|---|
| | *1. Learning objective 1* | | | | | | | |
| | *2. Learning objective 2* | | | | | | | |
| | *3. learning objective 3* | | | | | | | |
| | *4. etc.* | | | | | | | |

| F. | **Brief outline of actions to prevent fraud (like free-riding by students):** |
|---|---|
| G. | **Brief outline of actions to ensure consistent assessment by various teachers/coaches:** |
| H. | **Brief outline of determining the final mark (including the weighing of components and the fail/pass regulations):** |

<mark>*Please, find guidelines for filling out this matrix on the next pages*</mark>

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[1] Bloom's original taxonomy dates from 1956. Since then, various attempts have been made to revise the work, of which not all have been underpinned by empirical research. The actual teaching at IDE and the OC Focus modules for teachers/UTQ programme, feature different variations of Blooms' taxonomy. For example, the 'synthesis' category is sometimes replaced by 'create', and occupies the 'evaluate' position. A framework is required to enable assessing the way in which examination in a course is related to its learning objectives, and to enable mutual communication on the matter between lecturers and the Board of Examiners. For pragmatic reasons, the IDE Board of Examiners decided to use Bloom's original taxonomy as the assessment framework. Discussions on 'which taxonomy' to apply, and 'which is the correct version', are expected to be avoided in this way.

[2] The word 'Exam' here, is supposed to cover anything that contributes to assessment (of students) in the course, including tests, instructions, assignments, etc....

# Guidelines for filling out the matrix format

Below is a *point-by-point* explanation of the various aspects of the examination matrix, indicated with capitals in the matrix format.

**A., B., C.**, and **D.**
At A. factual information is required: the *name and code of the course* should be filled in, followed by a *list of assessment parts* that are used in the course (B.), and which can be both formative and summative examinations (mark formative examinations).
At C., and D. fill in the *names of the teachers* who were involved in devising the examinations, and *the names* of those who were involved in assessing these.

**E-1.**
Enter the course's *learning objectives* (LO's) in the 1st column (description of what a student should be able to after successfully completing the course). Use the LO's as formulated in Course Base. Each LO should be entered in a separate, numbered cell.

On the horizontal axis, the various levels of the cognitive processes are shown to an increasing degree of complexity. In other words, the levels of cognitive complexity are ranked; a continuum from *concrete* to *abstract*. For example; a student is only able to analyse, if the required subject material is understood and the student is able to apply it. In principle, **the way in which a learning objective is formulated prescribes the proficiency level on which it should be examined**, bearing in mind that a *higher level of proficiency implies that the lower levels are already covered* (see Bloom's taxonomy).
The table below includes additional information on the six levels of the cognitive process.

| Types of objectives | Explanation | Operationalisation (examples of verbs) |
|---|---|---|
| **Remember** | Reproduce facts | categorise, describe, distinguish, recall, rephrase, … |
| **Understand** | Comprehend, interpret | characterize, illustrate, explain, … |
| **Apply\*** | To apply knowledge and insights (the former categories) into new situations | deal with, calculate, use, choose and follow a procedure, translate, … |
| | *\*Given the content of the programmes, competence of the learning objectives is often demonstrated by students in a report or oral presentation. In the case that 'communication' is the focus of the learning objective, it is important to determine whether the focus is on communicating the content (applying), or the content itself. If the latter is the case, often a higher cognitive process is at stake (analyse, synthesise or evaluate). The learning objective should be categorised on the corresponding cognitive process of the examination matrix.* | |
| **Analyse** | Tackle a (complex) situation with knowledge and insights, divide it into sub-parts, reduce problems to a pattern or underlying problem | argue, examine, compare, discuss, (re)define, verify,… |
| **Synthesise** | Combine parts into a coherent and functional whole | build, compose, design, make, model, solve, suggest … |
| **Evaluate\*** | Make judgements based on criteria and standards | advise, appraise, decide, comment upon, evaluate, test, value, … |
| | *\*This cognitive process is <u>not</u> about (self) reflection. Since self-reflection is a form of meta-cognitive knowledge, and can be applicable to any level of the cognitive process. For example, after performing a calculation (applying), a student can conclude to use another method from now on. To be able to evaluate as meant in Bloom's taxonomy, is to be able to <u>make judgements</u> based on criteria and standards.* | |

Table 1. Explanation of Blooms Taxonomy

**E-2.**

Next, state _for each learning objective_ what *examination method* is used or in which exam the LO is being assessed, also indicate *the level of cognitive process* the LO is being assessed on. If possible, enter the weight of the (summative) examination in the final mark.

**F.**

State briefly what measures are taken to prevent fraud. Fraud is e.g. cheating during an examination, free-riding on the work of others during group assignments, improper use of someone else's ideas, or committing plagiarism when writing reports.

**G.**

State what activities are organised during the course, to ensure consistency in assessment by different teachers/coaches.

**H.**

State how the final mark for the course is determined. Include the weighing factors for the different components, as well as any bonus-malus arrangements. Indicate the pass/fail rules, and whether students are allowed to improve a grade and if so, how.