Annual report Board of Studies BSc/MSc CT/CE 1/9/2019-31/8/2020
Faculty CEG

This annual report of the Board of Studies BSc Civiele Techniek and MSc Civil Engineering provides an overview of its actions during the academic year 2019-2020. This review serves to inform people and bodies within the TU Delft concerned with the BSc and MSc program about the status of recent and ongoing items within the BoS. Also, this document gives new BoS members insight into recent and ongoing items and supports the progress of actions in the coming year.

The BoS is a committee that in a constructive-critical manner works to ensure the highest quality of education in the programmes. The BoS interacts with teachers, students, Board of Examiners, Education & Student Affairs, and the Director of Studies. The BoS consists of 15 members, of which 7 staff members and 8 student members. In 2019-2020 the board consisted of:

Dr.ir. R. van Nes	chair
Dr.ir. D.C. Slobbe	staff member
Dr.ir. K.N. van Dalen	staff member
Dr. C.A. Katsman	staff member
F. Pisano, PhD	staff member
Prof.dr.ir. S.C. Steel-Dunne	staff member
Dr.ir. F.P. van der Meer	staff member
Dr.ir. R.E.F. Lindeboom	staff member
M.D. van Pampus	student member
G.T. Bosma	student member
B.D. den Hollander	student member
V.S. Huigen	student member
W.S. Brouwer	student member
O.S. van der Marel	student member
S.J. Bierma	student member
N.K. Ambadi Omanakuttannair	student member

The BoS is supported by mw. M. Roodenburg (Secretary to the Board).

The BoS has performed its lawful roles and responsibilities:

- Provide advice and approval on the establishment of the Teaching and Education Regulations (OER/TER)
- Assess the implementation of the OER/TER
- Provide advice – solicited and unsolicited – to the Dean, the Director of Education and the Director of Studies concerning the programme and all associated teaching-related affairs

The BoS started in September and had eight meetings in which a substantial number of requests for advice were discussed. Due to Covid-19, the BoS meetings from March to June took place via a discussion board on Sharepoint and via MS Teams.

Important Items 2019-2020
Prominent items relate to education quality, changes in the BSc and MSc programme and the minors.

1. Education quality
1.1 Course evaluation process
1.2 Advice on questions for EVASYS

2. BSc programme

2.1 Bachelor End Project
2.2 Restructuring the “Bouwplaats” second year
2.3 Analysis BSA results BSC CE
2.4 Advice and approval OER and Annex BSc 2021-2022

3. MSc programme

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3.2 Load Identification and Monitoring of Studies (OE44055)
3.3 Changes MSc CIE track GRS
3.4 Merging CIE5317 and CIE5302 and proposal new course
3.5 Changes curriculum MSc CE, track Building Engineering
3.6 Extension CIE4362 Soil Structure Interaction from 3 to 4 EC
3.7 Merging CIE5312 and CIE5315 and proposal new course
3.8 Extension CIE4614-18 3D Surveying from 4 to 5 EC
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4. Minor

4.1 New minor course ‘Masonry’
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5. Subcommittees BoS

5.1 What justifies 40EC for an MSc-thesis?
5.2 Restructuring information on generic CIE courses in TER, Annex, and Rules and Guidelines
5.3 Freedom versus regulations

Elaboration on items

1. Education quality

1.1 Course evaluation process

The Board discussed the document from Quality Assurance in two rounds.
Practice showed that the new process leads to substantial higher response rates for the Evasys survey than the old process, and that the Evaluation meetings in the master seem to work, with a diversity in the type of discussions. The Board believes that the new set-up is a clear improvement.
The Board was interested in the experience with the new process in the study year 2019-2020, especially with respect to the Study Response Groups and the quarterly Evaluation meetings in the MSc. Furthermore, the Board recommended to pursue a quality inclusive organisation, for instance by developing methods to stimulate peer review within and possibly across programmes. The Board recommended being pragmatic on the Study Response Group membership issue. It must be communicated explicitly that a membership of a study association is not a requirement and the organisational role for study associations must be maintained. The Board asked Quality Assurance to provide the BoS with the quarterly and yearly evaluation results at programme (BSc) and track level (MSc). Evaluation at course level was considered to be accounted for in the regular evaluation process.
The Board approved the new course evaluation process as outlined in the request.

1.2 Advice on questions for EVASYS

The Board was asked to give comments on the questions used for the EVASYS. Suggestions made referred mostly to the length of the survey: is always a full set of sub-questions needed, especially when everything is OK? A hierarchical questionnaire structure might reduce the number of questions to be answered. Another comment was that some questions referred to number of aspects at the same time, making the interpretation ambiguous.

2. BSc programme

2.1 Bachelor End Project

The proposal was a clear improvement on the learning objectives and the assessment criteria of the BSc-thesis project with specific attention to constructive alignment. The proposal was developed in cooperation with BEP coordinators, showing that practice is more aligned than the formal descriptions.
Members of the Board made several comments on the provided documents which might be useful for further improvement. The Board approved the proposed learning objectives and assessment criteria.

2.2 Restructuring the "Bouwplaats" second year

The restructuring of the 2nd year Bouwplaats required a critical look on the learning objectives and assessment for the 2nd year Bouwplaats as a whole and for the role of the partial results (e.g. an assessment matrix). The proposal makes the Bouwplaats more flexible for students as it limits the possibilities for study delay, which is especially relevant given the go/no go decision for the programming learning line.

It was proposed to discriminate between 8 elements in the "Bouwplaats", 2 in each educational period, with 1 EC to each element, assessed separately. One of these two is part of the computer programming learning line and the other concerns a practical related to a BSc course. The setup for the "Bouwplaats" in the second year of the BSc is:

- Q1: programming + practical fluid mechanics
- Q2: programming + practical material science
- Q3: programming (including remote sensing application) + practical geo-engineering
- Q4 programming + practical numerical mathematics

The Board approved the proposed split of the 2nd year Bouwplaats in a number of partial results but did ask for a more detailed formulation of learning objectives and assessment criteria for each part.

2.3 Analysis BSA results BSc CE

The Board compared the BSA results with those for other faculties. The conclusion could be that the selection procedure based on motivation (letter/portfolio) and the average of grade (8?) on high school make a difference. Note that for CE also a strong correlation has been found between high school grades and 1st year results. When looking at the first-year courses it was concluded that the Mathematics- and Mechanics courses are considered to be more difficult. Furthermore, it is noted that 'Lineaire Algebra', 'Analyse' and 'Dynamica en Modelvorming' already have been improved. It seems that part of the first-year influx has problems with the Mathematics- and Mechanics courses, however, these courses are typical for CE.
The Board believes that there's nothing wrong in the first- year programme. Selection seems an inappropriate measure and has the risk of excluding students that might be successful. Better information for new students seems thus the best response. The information for prospective students must clearly communicate the importance of Mathematics- and Mechanics courses in the curriculum.

2.4 Advice and approval OER and Annex BSc 2021-2022

The OER and Annex BSc were discussed in multiple rounds: due to new and adapted regulations because of Covid-19, a different time schedule was applied. As a result, the final version of the OER was postponed to September. In the first round Birgid Zaaijer gave a brief explanation of the main (expected) changes in the OER. Question raised in the discussion was the extent to which leniency was applied for e.g. access criteria for a number of courses such as the BSc-thesis.

Some minor comments were made for the Annex BSc, the main one being the limited description of the BSc-thesis project, especially compared with the text on the MSc thesis in the Annex MSc.

The Board approved the adapted version of the Annex BSc.

3. MSc programme

3.1 Proposal to change CTB2001WO

CTB2001WO is a 2 EC bridging course for incoming MSc students that have not learned how to program (or have not learned how to program in Python) in their BSc degree. MSc students take the course next the other classes in their first quarter.
It was proposed to spread CTB2001WO over two quarters (1ECT in Q1 and 1ECTS in Q2) to lighten the workload in Q1. In addition, spreading the course over two quarters will enhance the learning process, as students will be programming over a longer period of time.

The Board approved spreading CTB2001WO over the first semester and aligning this course with the programming practical in CTB2000.

3.2 Load Identification and Monitoring of Studies (OE44055)

The elective course “Load Identification and Monitoring of Structures” (OE44055) is part of the MSc curriculum of 3mE. However, a majority of the students attending this course are from Civil Engineering. The course suits the interests of especially Hydraulic and Structural Engineering students. Having a CIE-code emphasises this relationship.

The BoS approved the change of course code for the course ‘Load Identification and Monitoring of Structures’ (OE44055) to a CIE-code having the name ‘Vibration-based monitoring and identification’.

3.3 Changes MSc CIE track Geoscience and Remote Sensing (GRS)

The proposal contributed to a more coherent programme for the GRS track. The themes had clear profiles, and each has, due to the introduction of the new courses, a sufficient number of courses. The requirement for the list of electives will be updated from minimal 3 courses to minimal 20 EC. The three new courses were properly designed having suitable learning objectives and assessment matrices. These courses will also be relevant for students from other tracks such as Hydraulic Engineering and Water Management.
The Board approved the proposed changes in the curriculum of the track Geoscience and Remote Sensing.

3.4 Merging CIE5317 and CIE5302 and proposal new course

Integrating two relatively small courses having a strongly related content into a single coherent course is good for the study programme and the students. The Board approved the proposal for merging the courses CIE5317 and CIE5302 into a new 6 EC course.

3.5 Changes curriculum MSc CE, track Building Engineering

Main reasons for the proposed changes were the decisions of the faculty of Architecture to allow only courses having 5, 10 or 15 EC, the decision to stop the course AR0531, and the wish to achieve a feasible schedule for a number of preferred electives. The changes in the faculty of Architecture are not within the scope of the Board. However, changes in course sizes might lead to study load changes, an issue which is therefore a point of attention for the faculty of Architecture and the track Building Engineering as well. The two proposed alternatives for AR0531 provide a coverage of the original scope and learning of that course, although coming from different faculties each course having a different perspective.

The Board strongly recommended not to include deficiency courses in the list of electives in the Annex of the TER and to find other means to assure a feasible schedule for students having deficiencies.

The Board approved the proposed changes in the curriculum MSc CE, track Building Engineering.

3.6 Extension CIE4362 Soil Structure Interaction from 3 to 4 EC

The Board recommended reformulating the expected study load for the new 4 EC course so that it can be used as a reference for the evaluation of the new course next year and to check the relation between the study load, the learning objectives and assessment methods (assignment and exam).
The newly formulated learning objectives are a clear improvement.

The Board approved the change in course size from 3 EC to 4 EC.

3.7 Merging CIE5312 and CIE5315 and proposal new course

The new course is compulsory for the specialisations Environmental Fluid Mechanics and River Engineering. This affects the work loads of both specialisations; in particular, River Engineering with an increase of 2 EC.

The Board approved the proposal for merging the courses CIE5312 and CIE5315 into a new 5 EC course. However, after the positive advice, it had been decided to postpone the merging of CIE5312 and CIE5315 as it impacts the total amount of EC in the curriculum of River Engineering. The new course will be implemented in academic year 2021-2022.

3.8 Extension CIE4614-18 3D Surveying from 4 to 5 ECTS

The BoS agreed that the small assignments on echo sounding and on camera calibration, together with attention for digital photogrammetry are relevant components within the course and the programme. This justifies an extension of 1 EC.

The Board approved the change in course size from 4 EC to 5 EC.

3.9 Advice learning objectives Multidisciplinary Project

The BoS discussed the draft proposal for the learning objectives and assessment criteria for the Multidisciplinary Project. The new version of the learning objectives and assessment criteria is considered to be a clear step in the right direction. Several suggestions were made for further improvement of the learning objectives: more clarity of the final attainment levels, include communication explicitly, a higher weight for the actual interdisciplinary research/design, and attention for uncertainty and limitations of assumptions.

3.10 Advice and approval TER and Annex MSc 2021-2022

The discussion of the TER and Annex MSc followed the same procedure as that for the OER and Annex BSc. The final version of the TER was postponed to September.

The Board made a number of comments on the Annex MSc, especially:

- The unclarity of the role and the regulations for the annotations
- Some questions on the implementation of the updated programme for Building Engineering, e.g. with respect to the positioning of deficiency courses (see also point 3.5)

Furthermore, there appeared to be a mistake in the formulation of the admittance requirements for the MSc-thesis.

In the second round these issues were addressed, although it is noted that the issue of deficiency courses could be dealt with more systematically in the Annex.

The Board approved the updated version of the Annex MSc

4. Minor

4.1 New minor course 'Masonry'

The course CT3290-15 Bend & Break Glass, offered by the Faculty of Architecture, has been part of the minor Bend & Break. It was expected to be discontinued at the end of the academic year 2020-2021, but it became clear that the course could not be offered anymore already in 2019-2020. To be able to continue the minor Bend & Break, the new course on masonry had to be introduced in the present academic year.

The BoS recommended to explore opportunities to re-introduce the course Bend and Break Glass in the near future. Bend and Break Glass was considered to be one of the more attractive courses in the minor, e.g. for Architecture students, as glass is a new construction material.

The BoS was positive that on short notice a proper alternative for the course Bend and Break Glass has been found. The new course on Masonry fits with the objectives of the minor. The BoS recommended to formulate the learning objectives according to the current standards and to make clear how they are assessed.

4.2 Exchange/minor abroad

The Board discussed the proposal in two rounds. The discussion in the first round did not lead to a clear advice.

The Board acknowledges the dilemma between freedom for students and the universities goal to limit the turnaround time of the BSc. A clear procedure with clear requirements is useful.

In the first round two topics were explicitly discussed:

- There are doubts on the effectiveness of the proposal given the goal of pursuing a nominal study progress. Students having resits in Q3 and Q4 do not benefit from taking a minor in The Netherlands. Furthermore, for quite a number of universities abroad the first semester ends before the Christmas season, which means that resits in Q2 are also not affected by a minor abroad.
- The requirements that have been formulated are quite high: 65 EC out of 75 offered or 120 EC out of 135 offered (both excluding resits in Q2). These requirements seem to suggest that only good students are eligible to take a minor abroad.

The Board recommended the DoS to consider the two discussion points. The DoS came up with an updated proposal for the admission procedure. The Board agrees with the argumentation for a relatively strict admission policy for a minor abroad.

The Board approved the proposal for the admission procedure for a minor abroad in which students in their second study year should have a minimum of 60 EC when submitting their application, and students in their third study year a minimum of 115 EC.

5. Subcommittees BoS

5.1 What justifies 40EC for an MSc-thesis?

This question was addressed by a subcommittee and was discussed within the Board in several rounds.

The Board of Studies considers it essential that students are able to learn when working on their thesis. They should have time to adapt their plan when necessary, be able to use a different methodology and to reflect on the methodologies and consequences of their project for practice and research. It is noted that these goals need to be added to the learning objectives of the MSc-thesis.

The Board believes that 40 EC is essential to maintain the quality of the thesis study while addressing the assessment committee's concerns. Since a solid preparation stage is key, as is sufficient time for the actual thesis study itself, it is proposed to split the MSc-thesis in two parts: a preparation stage and the actual thesis study. For the preparation stage 10 EC is required, allowing students to take courses in parallel to make up for deficiencies, while for the actual thesis a minimum of 30 EC is required.

In the preparation stage students develop a solid and scientifically supported report that provides the basis for doing the actual thesis project, a reference for adaptations when relevant, and a reference for considering further implications of the project. The preparation part needs to be finished with a commensurate period of time, e.g. within one quarter. If students do not succeed in finalising this preparation part successfully, it is recommended to start again with another thesis topic.

The Board believes that given a proper preparation as described above, 30EC is the minimum to perform a MSc-project that is challenging and which allows students to react to intermediate results, i.e. to evaluate them and to adjust their project when relevant, and which provides them time to reflect on the methodologies applied and the implications of their findings for practice and science. Halfway the thesis project it is recommended to have a formative assessment of the project, which stimulates reflection of the process and results so far as well as provides feedback on how well the assessment criteria are met so far.

These recommendations were shared with the DoS per e-mail and discussed in the Management Team.

5.2 Restructuring information on generic CIE courses in TER, Annex and Rules and Guidelines

The TER for 2019-2020 and Annex contains a number of articles from the Rules and Guidelines of the Board of examiners from 2018-2019. When discussing the draft version of the TER and Annex in 2019 the BoS suggested to take a closer look and to check which parts would fit in the TER, the Annex, and the Studyguide. This year the BoS prepared a proposal for reducing articles 13, 14, 15, 24, and 25 of the Annex of the TER with respect to the Internship, Multidisciplinary project, Additional graduation work and the MSc-thesis.

The proposal was shared with the DoS, OSA and the Board of Examiners.

5.3 Freedom versus regulations

The Board started a sub-committee on the balance between freedom for students to arrange their programme and implementing strict regulations when taking a programme. As a first step an overview was made of two extreme options: freedom focused and strictly regulated. For these options a first assessment was made, and the current BSc and MSc-programmes were compared with these two extremes. In the discussion in the BoS it was concluded that it would be useful to write down a vision that should be translated to the new MSc programme and to the BSc. However, due to Covid-19 the follow up was halted.

6. Actions for 2020-2021

In 2020-2021, as well as continuing to advice on regulations and proposals for educational changes, the BoS will focus on:

- **Educational quality**: Follow-up on advice for course evaluations.
- **Redesign MSc-programme CE:** The current Redesign of the MSc-programmes will lead to a number of requests for advice and/or approval.
- **Balance between freedom and efficiency**: Follow-up on previous work of the sub-committee Freedom versus regulations.