Annual report Board of Studies BSc CT and MSc CE 1/9/2020 - 31/8/2021
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 2020-2021. 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 16 members, of which 8 staff members and 8 student members. In 2020-2021 the board consisted of:

Dr.ir. R. van Nes	chair
Dr. M. Hrachowitz	staff member (from December)
Dr. C.A. Katsman	staff member
Dr. S.L.M. Lhermitte	staff member (from November)
Dr.ir. R.E.F. Lindeboom	staff member
F. Pisano, PhD	staff member
Dr.ir. D.C. Slobbe	staff member (till October)
Dr.ir. K.N. van Dalen	staff member
Dr.ir. F.P. van der Meer	staff member
E. Bosveld	student member
J. Caceres Jimenez O'Farrill	student member
C.C. de Hullu	student member
P. Mako	student member
T. Nieuwhuis	student member
N.C.G. Tack	student member
S. van Os	student member
N. Walrave	student member

The BoS is supported by M. Roodenburg (till March) and J. Dawar (from March): 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 (DoE) and the Director of Studies (DoS) concerning the programme and all associated teaching-related affairs

The BoS started in September and had seven meetings in which a substantial number of requests for advice were discussed. In addition, there were two meetings of the BoS with the Redesign team of the MSc CE. Due to Covid-19, the BoS meetings took place using discussion boards on Sharepoint and via MS Teams.

Important Items 2020-2021
Prominent items relate to education quality, changes in the BSc and MSc programme, and the redesign of the MSc.

1. Education quality

1.1 Study loan act (Nov)
1.2 Quality online education (Dec/March)
1.3 Evaluation of BSc & MSc thesis (March)
1.4 Study loan act (June)

2. BSc programme

2.1 Approval OER BSc 2020-2021 plus addendum (Sept)
2.2 Reduction minimum EC for BSA (Jan)
2.3 CTB2100 Differentiaalvergelijkingen (March)
2.4 CTB1120 Inleiding Civiele techniek (March)
2.5 OER 2021-2022 (May/June)
2.6 Annex BSc 2021-2022 (June)

3. MSc programme

3.1 Approval TER MSc 2020-2021 plus addendum (Sept)
3.2 Soft cut BSc-MSc (April)
3.3 Update MSc grading guide (May)
3.4 TER 2021-2022 (May/June)
3.5 Annex MSc 2021-2022 (June)

4. Programme redesign

4.1 Position paper redesign MSc Ce (Sept)
4.2 Redesign documents: CE profile, Module/unit, Programme core and track programmes (Dec/Jan 26)
4.3 Redesign outlook 2nd year (March)
4.4 Learning line for Modelling, monitoring and data science (March)
4.5 Draft assessment vision and policy (March)
4.6 Set-up for the bridging programme for new programme (March)
4.7 Redesign programme core and track programmes round 2 (March 2)
4.8 Assessment policy CEG (May)
4.9 Bridging programme 2021-2022 (May)
4.10 Transition programme (June)

5. Discussions BoS CE

5.1 Contracts for MSc thesis projects (Nov/Dec)
5.2 Freedom versus regulations (March)
5.3 New MSc EE (May)
5.4 Efficiency Bos (June)

Elaboration on items

1. Education quality

1.1 Study loan act (Nov)
There has been a short meeting with the Director of Education and the chairs of the BoS AES and CE about the study loan act. A proposal focussed on the students' side has been submitted to the Executive Board of the University. In the near future, the focus will be on topics for improving the efficiency for teachers. The BoS will be involved in these discussions.

1.2 Quality online education (Dec/March)
This topic was discussed twice.
In the first discussion it was noted that the number of on-campus lectures is limited while a number of lectures is streamed to another lecture hall, which makes the on-campus lectures less attractive. Therefore, it was suggested to give more students the opportunity to attend a live lecture, for instance by distributing the

students sequentially in time or to change rooms from 'live' to 'streaming' during the break. This suggestion was shared with Education affairs, leading to the following response: It is already a point of attention, however the main concept is "move the teachers, not the students, and the willingness to offer lectures multiple times is limited due to high workload.

The topic in the second discussion was a survey performed by PS. This survey clearly indicated key elements for online examinations such as: possibility to practice with the examination platform in advance, flexibility to go back to previous questions, and uploading a scan of the exam. Results will be reported in more detail and will be distributed by PS among the education coordinators of the tracks.

In both discussion it was concluded that given the conditions things are going pretty well.

1.3 Evaluation of BSc & MSc thesis (March)

The BSc thesis is being evaluated in the regular process and in the reflection of students on the bachelor thesis project. Quality Assurance is working on improving this process.

For the MSc thesis a survey has been developed. This survey will be distributed next academic year among the students. The Board gave suggestions for improving the questionnaire and for the moment to send the survey to the students. It was noted that the setup is focused on repairing what's not sufficient and less on further improvement.

1.4 Study loan act (June)

The discussion in the Board of Studies led to four focus points:

- The transition to more formative assessment
  The switch towards more formative assessment requires changes in the way of teaching. Current experience with courses having sufficient TAs providing feedback shows that capacity is important as well.
- The additional workload of switching to new modules and units
  The redesign of the MSc leads to a substantial transition from current courses to new units and modules. This requires the development of lecture material, new material, new assessment methods (formative and summative) and basic activities as new presentation material and Brightspace environments. Sufficient support for these activities is essential for a smooth start of the new programme.
- Student facilities at the campus
  It is expected that after Covid there will be higher demand for study facilities at the university. This is also in line with the educational vision. The current capacity is considered to be insufficient for the expected demand and the facilities are not always suitable for the envisioned study activities.
- Impact at programme level
  In previous cases lecturers were invited to submit proposals. Given the programme wide changes it is important to ensure that projects will have a multiplier effect, e.g. by involving a larger group of lecturers in every project. In this way it is more likely that such projects will have an effect at programme level.

2. BSc programme

2.1 Approval OER BSc 2020-2021 and addendum (Sept)

The addendum Covid-19 articles and the 'OER' were discussed. The addendum is only valid during the Covid-19 situation, it mainly deals with the way of examination and teaching.

The Board gave suggestions for further improvement of some formulations and approved the OER and Annex BSc for 2020-2021.

2.2 Reduction minimum EC for BSA (Jan)

In the current situation with online education due to the Covid-19 regulations, leniency in the regulations is certainly justified. Reducing the required number of credits for the BSA from 45EC to 39EC would be beneficial for the first-year students, as it allows students to miss 4 courses instead of 3 courses including the possibility of missing a 6EC maths-course.

2.3 CTB2100 Differentiaalvergelijkingen (March)

The current course is slightly different from comparable courses used in other BSc programmes at TU Delft. The proposed changes make the BSc courses on differential equations consistent, while the study load is not affected. This proposal is supported by the Board.

2.4 CTB1120 Inleiding Civiele techniek (March)
The proposal to change the content of CTB1120 in order to provide an introduction for the new MSc programme on Environmental Engineering led to the question whether the number of changes wasn't too large given that the remaining BSc-programme remains the same. Unfortunately, there was no time left to work this out in more detail and therefore the proposal was withdrawn by the faculty.

2.5 OER 2021-2022 (May/June)
In the first round, the following comments were made:
- The fact that minors and the bridging programme are mentioned in paragraph 1 while they're not always used in the subsequent paragraphs.
- Whether articles on online examinations that were transferred from the addendum to the OER are meant as a permanent option?
- A number of small comments and suggestions were made with respect to the formulations.

In the second round the OER BSc 2021-2022 is approved by the Board of Studies.
The Board suggests including a reference to 'generic' websites/regulations at the front of the OER.
Furthermore, some suggestions were made for a clearer formulation.

2.6 Annex BSc 2021-2022 (June)
The Board approves the Annex BSc 2021-2022 including the cancelling of the equivalency regulation for the courses CTB2200 and CTB2400.

3. MSc programme

3.1 Approval TER MSc 2020-2021 and addendum (Sept)
The addendum Covid-19 articles and the 'OER' were discussed. The addendum is only valid during the Covid-19 situation, it mainly deals with the way of examination and teaching.
The Board gave suggestions for further improvement of some formulations and approved the TER and Annex MSc for 2020-2021.

3.2 Soft cut BSc-MSc (April)
The Board was consulted on the extension of the 'soft cut' between BSc and MSc for 2021-2022, i.e. a student may miss up to 15 EC of the BSc programme, when starting the MSc-programme.

3.3 Update MSc grading guide (May)
The Board believes that the proposed update is a good improvement of the current grading guide. Categorisation of criteria is better as are the descriptions for the different grades. Adding descriptions for grades less than 6 provides a useful reference.

Main comments made by the Board are:
- What are the guidelines when using grades as 5 or less than 5? Is a 5 allowed as it can be compensated, and if so, is there a maximum to the number of criteria having a 5? And does a 'less than 5' imply a 'fail' as it cannot be compensated?
- For a number of criteria, the description for 10 seems more feasible compared to the old formulation. Is this intended as such?
- The criterion on the Research plan does not include adaptation of the research plan based on new insights gained during the thesis project. It currently focusses on the original research plan only.
- Grading Creativity might have a correlation with the topic, which makes the grading less objective. The same might be said for Utilisation. Here a low score might be given for a study leading to different results than expected.
- Some criteria have a substantial number of sub-criteria, especially in the C-section (Project management, communication skills and independence). This might lead to an average of the sub-criteria and thus less variation in the scores compared to crisp criteria.
- The weights for the categories are given, not for the criteria. In the current version these are equally split. In some cases, however, this doesn't do justice to the criteria themselves. Structure and consistency of the

report is clearly more work than proper Referencing. Moreover, the latter can more easily be repaired after receiving feedback. Differences in weights for criteria might also be relevant for other categories.

3.4 TER 2021-2022 (May/June)
In the first round, the following comments were made:
- The fact that minors and the bridging programme are mentioned in paragraph 1 while they're not always used in the subsequent paragraphs.
- Whether articles on online examinations that were transferred from the addendum to the OER/TER are meant as a permanent option?
- A number of small comments and suggestions were made with respect to the formulations.

In the second round the TER MSc 2021-2022 is approved by the Board of Studies.
The Board suggests including a reference to 'generic' websites/regulations at the front of the TER.
Furthermore, some suggestions were made for a clearer formulation.

3.5 Annex MSc 2021-2022 (June)
The Board approves the Annex MSC 2021-2022 with the following recommendations:
- Skipping the annotations from the Annex as for students starting in September 2021 it is not possible to receive a certificate. There's therefore no need to include it in the regulations. The concept of the annotations might still be valuable in guiding students when composing their study programme, but for that purpose other means of communication are more appropriate than the TER.
- The description in the table for Part 2: Electives should be completed with corresponding line from the remarks: "all subjects offered in conjunction with other MSc degree courses at a Dutch University or at an international university with an exchange contract with TUD". In this way the table clearly shows that for these 10EC a wide range of courses is allowed, and the remarks give more detailed specifications only. The current version suggests a limitation for faculty related courses only, which might be misleading.
- In the agenda meeting preceding the Board meeting it was stated that the list of convergence courses on page 29 might be deleted. The Board agrees, as specific convergence courses are already specified for each track and the list on page 29 contains a much longer list (and is sometime incomplete as well), which is confusing. Note that in that case article 3 needs to be adapted too
- Article 23 section 2 Refers to resits in August instead of July.

Furthermore, the discussion led to two observations for which the Board asked for a reaction from the DoS:
- The bridging programme that is included is the proposal that was presented to the Board in May. The Board made several comments and has not received a response yet. This makes it unclear whether it is already the final version or that it still may be adapted given the advice from the Board.
- The changes in the schedule for the Academic year raised a discussion as not all Board members were aware of this change. So, communication requires attention: publishing it in 'TU nieuws' appears to have limited effect. Moreover, the Board has a serious concern on the feasibility for both staff and students. Also, it is unclear which regulations staff and students should comply with. The Board therefore would like to receive a proposal on how the faculty intends to implement this in the coming study year and how feasibility for staff and students is assured.

4. Programme redesign

4.1 Position paper redesign MSc Ce (Sept)
The Board discussed the position paper for the new MSc Civil Engineering and formulated eight suggestions for further steps in the Redesign process which were shared with the DoS:
1. Develop a 'contribution matrix' showing the relations between FAs and programme components which would be valuable to see what the key contribution of each component to the final attainments is.
2. Be clear on the available flexibility for students to focus on their interests: what's the minimum level that's required for each FA?
3. Be aware of the coherency within track programmes as there might be a risk that depending on programme design choices and student's choices the coherency, the holistic perspective, or the balance between design guidelines and a basis for engineering creativity, could get lost.

4. When designing the individual components start with the faculty and programme core as that's the foundation for e.g. the track programmes.
5. Show the relations between tracks and the relation to the scope of Civil Engineering.
6. Formulate specific cross-overs both within the MSc-programme and with other faculty programmes to make them a more concrete component of the programme.
7. Define a strategy for a Civil Engineering perspective in the second year: freedom to choose or still some components in common?
8. Define an 'ideal solution' of the blind spot between the CE and EE MSc-programmes.

4.2 Redesign documents: CE profile, Module/unit, Programme core and track programmes (Dec/Jan)
This document was discussed in two rounds. The CE-profile, the Module Unit, the MSc Redesign documents at module level were discussed in the BoS meeting in December and the observations made by the BoS were shared with the DoS. In January there was a meeting of the BoS with the Redesign team in which the observations of the Bos were discussed as well as additional comments from BoS members at unit level.
Main comments made are:
1. Allocation of FA's to programme components require attention as most components relate to only a few FAs while the track related components should cover all FAs.
2. The module concept is still under development and might have a separate discussion on its own.
3. The Redesign document contains many LOs that are slightly different, and they differ mostly in scope. The variety makes it difficult to judge the LOs and their relationship with the FAs.
4. A number of learning lines are mentioned, yet a philosophy for learning lines seems missing.
5. Similarly, there seems to be some unclarity on the required pre-knowledge from the BSc.
6. Compliments for the ideas for the Continuum Mechanics unit. For the unit CE Design and Systems there are question marks for the feasibility and the alignment of the LOs and assessment.
7. The various track programmes show various deviations from the basic concept of the module structure described in the Position paper, e.g. having a larger common block than the Track core module by having one or more units in different A-modules or even in B-modules, while for another track there is relatively strict relationship between A- and corresponding B-modules. Note that there are pros and cons for both design approaches.

4.3 Redesign outlook 2nd year (March)
It was noted that the room to choose electives is limited, e.g. because of the fixed 5EC per elective. Given the two 15 EC projects that might be chosen (JIP and MDP) a 10 EC Internship doesn't seem logical as it usually takes a full quarter too. Another question is what is meant with 'multidisciplinary' in the case of cross-overs.

4.4 Learning line for Modelling / monitoring and data science (March)
Continuation of this learning line within the tracks is logical and the proposed method is feasible. Some suggestions were given for the formulation of the Learning Objectives of the learning line.

4.5 Draft assessment vision and policy (March)
The overall impression is that it is a clear, well-structured document that is well thought of and that is relevant for the redesign projects as it sets clear standards for assessment. Two main comments made are:
1. Attention for feasibility in practice (formal procedures, emphasis on formative feedback, focus on individual performance in groups, expertise for staff, capacity/workload).
2. The level of practical detail in the description makes it sometimes more a manual than a vision and policy document.
Other issues that stood out:
*   The document implicitly states that Assessment is related to modules or courses only, not units. What's the reason for this choice?
*   In the document there's explicit attention for the relation between LOs and ILOs. Note that currently tables demonstrating which LOs contribute to which ILOs are not used. Assessment matrices for the relation between LOs and the Bloom taxonomy, however, are used but are not mentioned in the document. In the experience of the Board these tables prove to be very valuable to check the suitability of the assessment methods.

4.6 Set-up for the bridging programme for new programme (March)
The proposed set-up of a library with modules from which a tailor-made selection can be made is appreciated by the Board. The choice for programme-based pre-masters simplifies the pre-master concept. Together it will increase the suitability of a pre-master for students with different backgrounds. Note that a programme-based pre-master has as the consequence that the MSc programmes, and especially the tracks, have to rely less on specific knowledge and skills taught in our BSc CT. Possibly this choice implies that the reference of the pre-master programme will be the 'standard' international BSc Civil Engineering rather than our BSc-programme. Having the modules available online throughout the year allows students to prepare when it suits them and to finish them on time in order to meet the requirements before starting the MSc programme. Critical note is that taking an online module might be doable if it is limited to one, perhaps two modules. If students have to take more modules it might also be real barrier as it can become a lonely process. This might even be more relevant for international students who are not used to the Dutch way of teaching. It is therefore recommended to pay extra attention to methods to make students already part of the TU Delft community during their pre-master programme. A second critical note might be the additional workload for teaching staff to develop the online material.
The Board made the following additional comments:
- For the library a number of themes is specified. Given the examples given and the current bridging programme it is unclear to which extent other themes than Mathematics can be addressed.
- The proposal distinguishes different types for using the modular structure, ranging from full bridging programme to additional material for incidental deficiencies. Students that miss 5 to 15EC do not seem to match with the four types.
- The comment that the current BSc will be adjusted prior to the start of the new MSc EE is not recognised by the Board.

4.7 Redesign programme core and track programmes round 2 (March 9)
In a second session of the BoS CE and the Redesign Team an update of the programme design was discussed at module and unit-level. In this discussion various observations were made, and suggestions were provided, e.g. on the weight of assignments in the assessment (too low, too high?), access to the programme for AES students (especially for the track Geotechnical Engineering), whether Ethics is part of the programme core, the relationship between A- and subsequent B-modules (none, preferred, mandatory?), and assessment at unit or module level. Overall, the impression is that the design is converging well.

4.8 Assessment policy CEG (May)
The Board appreciates the Assessment policy document. It's an attractive and challenging vision on education. The current document is a follow up of the document Assessment vision and policy that was discussed in the Board of March. Part of the comments made then, are valid for this document as well, especially the comments on the feasibility of the proposed shift to formative assessments and on the implementation, which seems not straightforward.
Another question might be to which extent the proposed set-up contributes to life-long learning, one of the FAs of the programme. Making the student responsible for his/her learning process certainly does contribute, but the document doesn't show a development in the strategy of formative assessments over the two years of the programme.
Second, the maximum of 25 summative assessments in the two-year programme is proposed as a trade-off between feasibility for students (not too large) and the coherency within the modules (not too small). Whether this maximum is indeed a good solution is not clear yet. The board therefore recommends to monitor this balance between the student's and the programme's perspectives closely, and to adjust the number of summative assessments when needed.

4.9 Bridging programme 2021-2022 (May)
The Board appreciates the split into three categories of courses and finds it a logical step from the current bridging programme in the direction of the envisioned bridging programme for which the framework was discussed in the Board meeting of March. When discussing the proposal, the Board had number of observations and some questions:
- When looking at the courses per category it is noted that CTB1730HBO Introduction to Geotechnical Engineering doesn't align with all other courses in the first category, which are all math related courses or put otherwise Engineering all-round courses. CTB1730HBO would fit better in the second category (fundamentals) while changing the rule for this category into 2 courses out of 3.

- For CTB2210 Structural Mechanics 3 it is noted that this requires pre-knowledge of Structural Mechanics 1 and 2. This might be justified for HBO students Civil Engineering, but limiting the bridging programme to these students only, might be too limitative, especially as the bridging programme is often used as a kind of checklist for students with other BSc-degrees as well.
- It is stated that students will be "advised" concerning their choice for fundamental and design courses. This could come across as a means of making the bridging programme track specific and seems therefore at odds with the requirement to have a "programme wide" bridging programme.
- It is also stated that "Courses in the group civil engineering design have been reduced" with the argument that the Programme Base Module already covers advanced mechanics. This argument is confusing (what was the original set of courses?) and sounds a bit strange as the mechanics unit in the Programme Base does not address design, and moreover this unit is designed for students who are already at CE-BSc level.

The Board shared their observations and questions with the DoS.

4.10 Transition programme (June)

The philosophy of the transition is logical. The Board has two main comments:
- There will be students who have delays leading to not taking all courses and failing some exams and resits. Having resits only in the second year is then insufficient. It is recommended to explore to which extent it is possible to record all courses that are offered in the first year and have exams only in the second year (and similar for second year courses). Furthermore, it is suggested to explore whether in the second year (i.e. the year having the resits) Q&A sessions could be offered in order to prepare for the scheduled resits. Note that in both cases the available capacity might require attention (Collegerama for the recordings and staff for Q&A sessions).
- Principle 6 is formulated in a very strict way: "Students who cannot complete the old programme in time have to switch to the new programme". Two comments here:
  o It is unclear when the programme cannot be completed: is that when courses that do not have equivalencies in the new programme have no scheduled examinations, does this include the MSc-thesis (as it is a course too)?
  o Second, switching to the new programme might require additional courses to be taken as the FAs of both programmes are different which could lead to further study delay. The Board would recommend a more flexible approach where (a subcommittee of) the Board of Examiners assists the student to compose a programme that still meets the requirements of the current programme, while using units and modules of the new programme, or courses from other programmes. Furthermore, it is suggested to communicate clearly to the students that mandatory courses of their programme should have priority in their study plan, as electives (in the track and in the second year) offer more freedom to switch to other courses when needed.

5. Discussions BoS CE

5.1 Contracts for MSc thesis projects (Nov/Dec)

The contract is part of the generic strategy of the University Board. Legal Services is leading. However, students might encounter problems because some companies do not want to sign the contract (mostly on the 'property right', the Ethics statement which is common for companies on stock exchange, and confidentiality). A short analysis by the student representatives didn't show substantial problems yet.

5.2 Freedom versus regulations (March)

This topic was discussed last year as well. The main issue is finding a balance between freedom & regulations to offer enough flexibility to the students. A subcommittee made an analysis of the new MSc-programme from this perspective, leading to the following comments:
- The programme offers limited freedom, especially in the first year. Moreover, the size of the modules limits flexibility as well.
- The rigidness makes it also vulnerable for study delays for students failing a unit. E.g. delays due to some reasons in the track modules imply resits in Q7 & Q8.
- Starting the MSc programme in February is not feasible in this program.
- Studying abroad is pretty hard in this program.

These observations were shared with the DoS.

5.3 New MSc EE (May)

The design for the new MSc programme Environmental Engineering was presented to the Board. The programme has similar set-up as the new MSc Programme for CE, with a few differences such as a portfolio for the LOs on Ethics and personal development. The Board finds the new programme complementary to the new MSc programme Civil Engineering, where Civil Engineering focuses on infrastructures and systems for society and where Environmental Engineering deals with the environmental perspective for society and its infrastructures and systems. The Board also clearly recognises the engineering perspective of the programme as well as the civil engineering perspective for e.g. the track Water resources engineering.

5.4 Efficiency Bos (June)

This year was exceptional: only online meetings due to corona and the redesign process led to large documents, which were available on short notice, and the board received limited or no response on the feedback given. Note that to a certain extent this also true for formal documents such as the annexes and the bridging programme. This makes it plausible that Board members currently have the feeling that the Board has a pro-forma role rather than a critical role as it should be. Observation from older members of the Board is, that this is typical for the last year.

The following proposals for improvement were suggested:
- Documents that are not available at least one week upfront should be postponed to the next meeting. A better alignment of preparation with the BoS agenda is required.
- Requests for advice could be more specific on the kind of advice that is asked for, e.g. focus points.
- An introduction course/workshop at the start of the academic year is recommended. Possible issue might be that the change of student members does not align with the agenda of the BoS.
- Meetings might be more frequent, and thus shorter. However, ideas on meeting size and frequency differ between staff and students: staff members generally prefer a low frequency of two-hour meetings, while students tend to prefer more frequent meetings during lunch time.

Actions for 2021-2022

In 2021-2022, as well as continuing to advice on regulations and proposals for educational changes, the BoS will focus on:

- Improvement of the efficiency of the BoS.
- Educational quality: On-line education and implementation of the Educational vision.
- Redesign MSc CE: Design second year MSc CE including the MSc Thesis, assessment new MSc programme, transition from old to new MSc programme.
- Role of the BSc as preparation for the new MScs CE and EE.