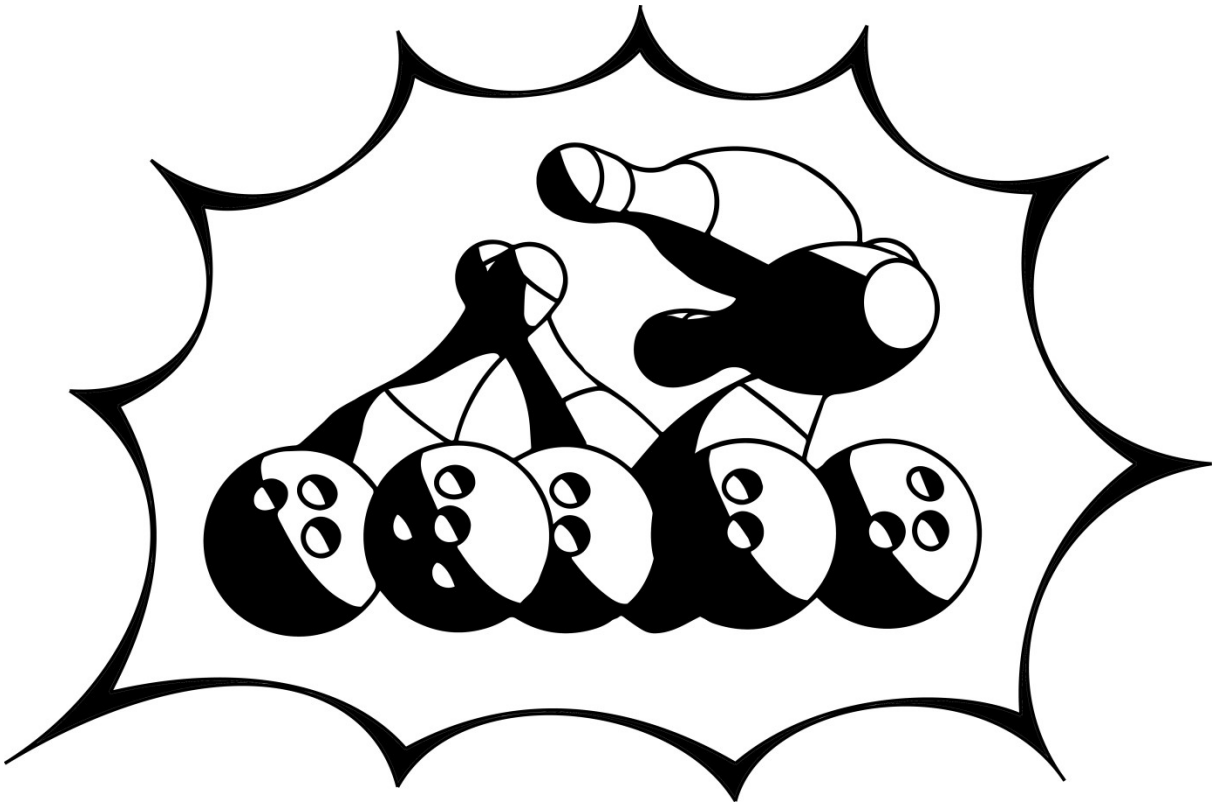
ENGINEERING DESIGN

4WBB0

2018-2018



Tutor Manual

Contents

Preface 3

Being a tutor 3

The art of facilitation 3

Group meetings 5

Planning 6

Assessment 7

- Evaluation 7
- Filing your rubrics 7
- Grading 7

Group effectivity 9

- Expectation (Meeting September 7) 9
- Mid term (Meeting October 2) 9
- Final (Meeting October 23) 9

Rules and regulations 10

- Self-study assignments 10
- Absence and late arrival for scheduled group meetings 10

Appendix 11

- List of contact persons 11
- Important dates 11

Preface

Before reading this tutor manual, you need to read the students manual. It explains the design objective, the course layout and the design process for this course. Furthermore, all deliverables, rules & regulations for students, rubrics, etc. can be found in the Course Manual (on Canvas).

Being a tutor

Your role as tutor is to facilitate the design process, to make sure that every student in the group takes an even share in the result (to prevent free-riding) and to support the course work. The challenge is to support and motivate your group without (in any sense) becoming responsible for the process or its result. If you can make the students feel that they have their own responsibility, they usually will take it. Even if they do not take their responsibility, the result remains theirs!

As a tutor, you will also help with the jury assessments and as members of the refereeing team on Tuesday September 25 (the preliminary design posters) and on Friday October 26.

The art of facilitation

As a tutor, your role is to facilitate the work of the groups. Basically, to take care about the process, align it with the course requirements, make students' lives easier, to provide them with feedback and support them on individual and group level as well.

This is a challenging role in this particular setting: the teams aim is to create new things where the group members are not experts in this field and they have to cooperate with others from different fields of studies. The facilitator/tutor role is a very human centred role, where getting to know individuals, how they think and how they feel is a core element to build upon and to identify personal and group needs. Based on what you see in Self-Study Assignments (SSA's) and during group meetings, you can try to profile your students (for example using the inventor, artist, hunter profiles). For your own reference, it is a good idea to refer to this profiling after each meeting, to assess the members of your groups and to individualise the facilitation/coaching approach they need.

On higher level, it is also important to see how these individuals influence each other.

Important facilitator tools:

- *Details vs. big picture focus*. When to zoom in to or to zoom out of the task/problem, based on what makes the team members and team feel comfortable / creative / productive at the moment, steer them in to detail or to a big picture focus.
- *Motivating, feeling safe, to challenge.* As the students are not experts on the topic and the whole course is a fully new thing, it is your task to provide a solid base, and provoke or encourage teams at different moments. It might happen that you have to step out of your own comfort zone and still have to seem sure about what you are doing.
- *Taking action*. In an academic program we are used to talking and "intellectualizing" instead of getting things done and being practical. As a facilitator, you have to push teams to have an "action > talking" ratio, and ensure them, as long as they DO, try instead of planning and theoretically thinking about it, everything will be fine, just take action.

- *Invention, ideas*. As this is a creation process, you have to be very mindful about providing space for ideas (even if they are unfinished, crazy ideas) and inspiration. For all kind of characters: inventor/artist/hunter/silent person you can't identify. This means, make sure that there is no bullying in the team! It often kills a creative processes and motivation.

The focus of the whole course is on the process, NOT on the outcome, help them make the process a real learning experience! The best groups are those which set their own goal, which want to make the best product they can, which take a risk in making a creative and innovative design with a clear user perspective.

Facilitation tools for

- enforcing creative thinking and ideation
- fast prototyping
- validation
- and the above mentioned topics

will be covered during the training on August 30 and 31. Learning will be documented and can serve you as a survival guide during the first steps of the course.

Also, in the facebook group, tutors can reach out to each other and also to trainers and lecturers for support, help and ideas.

Group meetings

Each week (starting Friday, September 7) you will have two meetings with your group (as described in the Student Manual). Only at the first meeting, you act as chairman. Prepare for this meeting! During this meeting the chairman of the next meeting (one of the group members) takes minutes.
Suggestion for first meeting agenda (total time: 50 mins).

Opening

Agenda

Evaluation of the expectation reports (5 mins)

- Did every student fill it in properly?
- Are there any remaining questions?

Strengths and weaknesses of the group (10mins)

- From the expectation reports: on which learning objectives does the group score very well or very poor?
- Cover both the process elements and the technical background

Gathering project-options: project-option is combination of sport, disability and user type (10mins)

- Gathering from SSA
- Align and specify

Selection of the most promising project-options (10mins)

- Determine decision criteria (focus on why?, make sure that is NOT about solutions!)
- Select best option.

Formulation of the SSA's (5mins): section 4.2.5 of the Course manual.

Meeting evaluation (10 mins)

Planning

The design process which the group has to follow, roughly gives a week-by-week planning. Make sure that the students arrive at the realization step in time! This will sometimes mean you have to ask them to move on to the next step, to force a decision. Make sure that you don't take these decisions yourself, just urge them to move on.
There is an XLS on Canvas which the students can use to make a planning, set their deadlines and balance the progress of the separate functions/parts of their design. It is a good idea to get your groups to take this (or a similar) XLS to keep track of their planning.

A suggestion for a project planning is given in sections 4.2 and 4.3 of the Course manual. However, keep insisting that the process is non-linear: that steps are not sequential. At all times, the group really has to start preparing itself for the remainder of the process. The challenge is to have to group realize that they have to do the best they can: they have to try to deliver the best product they can within the restricted time and budget.

For the realization, they may need to order stuff, if so, they need to make sure that delivery times are within reach.
There is a separate schedule in the manual for 3D printing-supply. This schedule is non-negotiable, if your group is not there in time, the slot is forfeited (there is only one opportunity).

Assessment

On Friday morning, September 7, you can pick up your group dossiers with the SSA and group meeting rubrics for your groups at Gemini South 2.135. Here, you will also receive the keys for your groups' lockers. You have to hand out these keys at the first group meeting at Friday afternoon.

Before each meeting you evaluate the SSA's uploaded by the students (make sure that they follow the given template) using the SSA-Rubric. If a student fails to upload in time, you denote that as "insufficient" result. You have one rubric (denoting all students) before each meeting. These rubrics need to be filled in carefully and before each meeting.
During each meeting you evaluate the students' meeting contribution using the relevant rubric. There is one rubric per group (for all group members) per meeting. It is essential to fill these carefully and denote any extra remarks.

Evaluation

It is of the utmost importance that at the end of each meeting, you take 5-10 minutes to share your observations/evaluations with the group. During these evaluations you ask the group on their opinions: it is important that you find out whether all group members participate as you can perceive it from the SSA's and meeting contributions. Make sure that this becomes an open atmosphere (you will notice that in the first few meetings the students will not dare to give their comments). The evaluation must be honest and constructive, so give appraisal to those who deserve it and give constructive criticism where and when necessary.
Show/tell the students that their SSA's are used to evaluate their performance and make sure that they understand that the set of SSA's is the "portfolio" of their input to the project.
The tutor training will address this topic extensively. If you don't feel sure about this, if you have any questions, please make sure to address them as early as possible in the course: the open evaluation is one of your most effective weapons in making the group work better, therefore, use it well!

Filing your rubrics

You have to assemble all filled in rubrics in your group dossier. This dossier is part of the weekly meeting with your lecturer. From these gathered rubrics and your weekly feedback, the lecturer (after consulting you) will grade the students' individual contributions.

Grading

The first grading (0%, only indicator) takes place in week 5 (after the Midterm Evaluation meeting on Tuesday, October 2). The second individual grading (30%) takes place after the meeting on Tuesday October 23 (in week 8).
After all grades have been determined, the group dossier (with all SSA and group meeting rubrics) is handed over to the lecturer (before October 26).

Peer-assessment

During the final meeting the group discusses peer-assessment. In the SSA for this meeting they have to fill in an assessment table (is given in their "Final SSA"-template):

Fill in this peer assessment form.
Score all your team members (including yourself) on a scale from 1 (least) to 5 (excellent}

name	Product contributions	Process contributions

Product contributions are typically: design choices, detailing decisions, building, testing, etc..
Process contributions are typically: planning, organization, group coherence, meeting behavior, etc.

Each student of your groups fills in this table in the SSA preparing for the last meeting. We ask you to gather and process this data as follows.

1) Gathering the peer-review tables
2) Calculate the average product and process contributions per assessed student.
3) Calculate the group-average product and process contribution-"grade".

Please make a table of these numbers for each group and share them with your assessing lecturer.

Group number: …

Student name	Product contribution average	Process contribution average
Group average:		

For the discussion in the last meeting, there are two interesting issues:

- the contributions of an individual student differ much from the group average. These are students which have (or are perceived to have) contributed much more or much less than the other group members
- the results in this peer assessment differ much from your own observations.

Group effectivity

For the three evaluation meetings, the students have to answer the open questions in the student manual (on a SSA form) and answer the online questionnaires. Make sure that you read the uploaded SSA's before the meeting to have an overview of students in your groups.

Expectation (Meeting September 7)

On the first group meeting, you start off with making an inventory of the expectation reports of the individual students. The essence of this is to assess the expertise of the group, to find the strengths and weaknesses and to address the learning points. This first status of the group effectivity is a reflection on the learning goals of the course (which goals are obvious to achieve for the group and which may be more farfetched) and on the technical aspects of the realisation of the design. So, make sure that you handle both aspects in the meeting: the process and the product!

Meeting September 28: make sure that the group members remember to fill in the midterm evaluation questions and four core-quadrants (section 4.1.2 of Course manual) as part of the SSA for October 2!

Mid term (Meeting October 2)

Extremely important!! This is the occasion to ask your group about their performance so far. The open questions are on their own performance. During the meeting you have to make sure that they speak out on how they perceive the group, if the group helps them to perform better or obstructs their performance. Try to find out how the group, as a group, can give better results. As this is a crucial point in the process, you will have an intervision meeting with the tutor trainers in the week before the PDF with the tutor trainers.

The group members also have to fill in the four core-quadrants. This can serve as a basis for a peer assessment round: How do the core-quadrants help or obstruct your work in this group?

Meeting October 16: make sure that the group members remember to fill in the final evaluation questions and peer assessment table (section 4.1.2 of course manual) as part of the SSA for October 23!

Final (Meeting October 23)

At the final evaluation, you can once more evaluate how the members of your groups have performed. As part of this SSA, the students fill in a peer assessment form. Although this is not a formal peer-assessment (it is NOT a formal part of the grade), it is still wise to listen well to what the group members have to tell about their peers: did everyone do as much as you have perceived, did some use their group members for free-riding, did the group members build on each other or where they competitors. Who did what and did they do well (according to their peers)? These are signals you can still use to adjust your impression of the group members.

During the meeting, you don't go into the assessment: make NO statements about grades!! The assessment is done by the lecturer (and not by you). The group should look at itself, state what have gone better, where they excelled, what went wrong in their process, etc. They should look back at their own expectations and see how they evolved during the course.

Rules and regulations

Self-study assignments

Students have to upload their Self-study assignments (using the templates given in the Students manual) on Canvas before 18h00 on the day before the next meeting. Failing to do so, means you have to give an "insufficient" for that assessment. *Do not bargain on this topic!* All tutors should stick to the same rule to avoid discussing between groups and to avoid unequal treatment from different tutors. The only maintainable rule is to be strict on this!

You can access the Homework assignments by logging in on Canvas. As a tutor, you have access to all assignments that have been uploaded by the students in your groups.

1. After you have logged in on Canvas, you can select the course "4WBB0 Engineering Design"
2. In the menu on the left of the screen, select "Assignments" A new page with all the SSA's appears.
3. Select the SSA of your preferences, e.g. SSA1. You will now enter the page of that assignment.
4. In the top-right corner, you will see a menu called "Related items". Click on "SpeedGrader™". You will now enter a new page.
5. On this page, you will find the submissions from all students in your groups. With the tab in the top-right corner you can easily navigate through the submissions. The pdf files will appear in your main screen. On the right, you can read the student's comments (if any), you find tools to grade the assignments or to look up previous versions of this submission.

It is not needed to grade the SSAs via Canvas. Neither the students, nor the staff will see those grades. All grading will take place in your folder with the paper rubrics.

Absence and late arrival for scheduled group meetings

In **all** cases of absence for a scheduled meeting, you have to notify the course coordinator (through an email to 4wbb0@tue.nl) preferably directly after the meeting but in any case before the next meeting.
This mail MUST have the subject:

- "absence of #name-student# (group nr ##) on #date#".

Each tutor must follow this rule to have an exact overview of all absences to prevent inequality between groups.

The ruling on absence is made by the course coordinator!
Never give any verdict yourself!

Students with 3 or more "absent" registrations will be graded "4" for the individual grading.

A student that arrives too late is still allowed to participate in the meeting. You denote coming "too late" on the rubric (include the estimated "too late" minutes).

Appendix

List of contact persons

Responsible lecturer: Rick de Lange (h.c.d.lange@tue.nl) GZ.2.126, tel. 2129
Course coordinator: Jaklien Bakers (4wbb0@tue.nl) GZ.2.135
Hardware: Michiel van Gorp (m.v.gorp@tue.nl) GZ.1.125, tel. 8726

Important dates

Date	Time	Item	Place
Tuesday September 4	9h45	Start of the project	Muziek Centrum
Friday September 7	13h30	Start of the first meeting	Schedule on Canvas
Tuesday September 25	8h15	Jury for preliminary poster fair	Metaforum
Tuesday October 2		Midterm evaluation	
Before Friday October 5		Determining first individual mark	Lecturer
Tuesday October 23		Last group meetings	
Before Friday October 26		Determining second individual mark	Lecturer
Friday October 26	12h00	Jury for closing event	