# ADP Guide

**Faculty 16 | Mechanical engineering**

Technical University of Darmstadt

Stand: July 2025

TECHNISCHE UNIVERSITÄT DARMSTADT

## Table of contents

# 1 Requirements for the assignment, registration and submission

**This elaboration is based on the regulations for the Master's degree program "Mechanical Engineering (PO 2021)".**

Students have the opportunity to contribute **two ADPs** with a total workload of 12 CP **or** one **ADP** (6 CP) **and** the module **External Project Work** (6 CP).

The **external project work** is carried out in an industrial company / start-up (larger than 5 employees) and has a scope of 180 hours (at least 12 weeks full-time work). It replaces the industrial internship provided for in the old examination regulations.

In the Master's program **in Aerospace Engineering** , students must take at least one ADP with an aerospace engineering theme. All departments of the department can offer "AE-specific ADPs", provided that the methodology, process, measurement technology, design, simulation, etc. to be investigated/developed is also relevant to and/or applied in aerospace industry/research. The professor decides whether there is a corresponding reference. The reference must already be indicated in the ADP's announcement for students. This should be done by a clearly visible notice under the project title, e.g. by the sentence: "This ADP is located in the subject area Aerospace Engineering" or "This ADP is eligible for counting as an Aerospace Engineering ADP." A corresponding graphic representation is also possible.

### Advanced Design Project (ADP)

- Changing topics (not a one-size-fits-all solution!),
- is up-to-date, complex and open-ended,
- can be created with industry partners.
- is a design task that can be solved using the development methodology
- or is a complex, open-ended research question that is analysed and structured in cooperation with other people and analytical and/or numerical and/or experimental methods are selected, solution variants are generated, evaluated and selected.

**A design task is defined as the following:**

The design task can be, for example, a design or the development of a process, a control strategy or an operating concept.

**Students will then be able to:**

- generate, evaluate and select solution variants as part of a team,
- represent divergent points of view and develop a solution to the problem,
- fill different roles in a team,
- Practice the basics of work and time planning repeatedly for complex tasks if necessary.

**The product to be designed (in the broadest sense) should be:**

- new
- tangible
- completed
- theoretically marketable.

**By successfully complete ADPs, students are**

- ... prepared for the profession,
- ... confident in the theoretical foundations,
- ... promoted in professional skills (teamwork, project management, communication, discussion, moderation and presentation skills),
- ... in the projects where it makes sense, prepared for the consideration of business aspects.

## Registration

- Participants: (min.) 4-8 students.
- Credit Points (CP) = 6:
  - in the case of very large ADPs that are offered by two or more departments and have the corresponding workload, 12 CP can also be awarded in exceptional cases,
  - In total, each student needs 12 CP from the field of ADP/External Project Work. According to the PO 2021, at least one ADP must be provided. Instead of an external project work, a second ADP can also be taken.
- ADPs must be registered in the MechCenter (not in TUCaN) before starting.
- To register, students should proceed as follows:
  - A team member of the ADP sends the assignment signed by the professor to pruefungsmanagement@mechcenter.tu-darmstadt.de
  - The assignment must also specify the start and end of the project,
  - The e-mail must include the names, matriculation numbers and study programme of all students participating in the ADP
  - The other fellow students will be included in the CC of the email
  - After approval of the assignment by the Dean of Studies, the examination management of the MechCenter carries out the registration for all participants across all departments in TUCaN

**Hint:**

A project that is started before registration and approval carries two dangers:

1. If not approved, students will have lost valuable working time.

2. If a student drops out of work in the ADP, the other students are not protected (see "Special Situations").

## Special Situations

### 1. Students in a group need a different amount of CPs (this may be the case due to different examination regulations or fields of study)

As a supervisor, you are not obliged to assign a different CP number than you specified in the project's call for proposals. However, if it is possible for you to distribute the workload differently within the processing group, it is possible to assign CP in a differentiated manner. However, this should remain an exceptional case.

### 2. A group member leaves the group

#### a) Consequences for this participant

If the exam registration has already been received, the participant who leaves the group will receive a grade of 5 if he or she does not present a proper excuse at the MechCenter. A proper excuse is a medical sick note (for the entire period of the ADP) or an excuse (according to the APB) to be evaluated equally.

If there is no exam registration, the participant can withdraw "unscathed", so to speak, but the rest of the group would then have to bear the consequences, which would be unfair. Therefore, it should always be ensured that all group members immediately register properly at the Office of Student Affairs.

#### b) Next steps for the rest of the group

If the exit takes place before the ADP has started and the group becomes smaller than four participants (minimum number of participants), the MechCenter (Ms. Rehwald) would have to be contacted directly and a special permit would have to be applied for.

If the withdrawal takes place during the ongoing project, the extent to which an adaptation of the requirements is possible should be determined in consultation with the group. If the title is changed, a decision by the department professor is required and then the MechCenter must also be informed.

### 3. ADP with less than four people

Many of the learning objectives of the ADP relate to successful teamwork. To ensure this, a minimum height of four people has been set. There may be exceptional situations in which it is possible to work with less than four people, e.g. through joint project work with industrial partners or team projects from other universities. In these cases, please contact Mrs. Rehwald from the MechCenter.

## Submission

In the module description, the following **form of examination** is specified for the ADP: "Form of examination: written paper (80%), oral examination (20%) Each group participant has a speech of 5-15 minutes, depending on the size of the group"

The format in which the submission of the written paper and the oral examination will take place must be communicated by the supervising institute.

Students who have not completed their Bachelor's degree at TU Darmstadt may not be familiar with our understanding of scientific work and writing. Students receive support for → academic work and writing from the Writing Center of the TU Darmstadt as well as from the ULB. The Writing Center also provides advice on how to → avoid plagiarism.

In June 2025, the Department of Mechanical Engineering also developed AI guidelines, which all students should be made aware of at the beginning of the ADP.

**German**: www.maschinenbau.tu-darmstadt.de/ki-leitlinien

**English**: www.maschinenbau.tu-darmstadt.de/ai-guideline

In July 2025, the TU also published a handout on this topic, which is somewhat more comprehensive and contains an additional section for teachers.

At the time of submission, the "**Declaration of Independent Work**" must be included in the written elaboration for each student. In addition, each student sends the signed declaration as a PDF file to pruefungsmanagement@mechcenter.tu-darmstadt.de. A corresponding template can be found in the download area .

## 2 Performance appraisal and criteria

- An individual performance assessment must be carried out (in accordance with the APB). Practically, all group members are allowed to get the same grade. However, if the contribution to the group's result differs significantly, differentiated grading should also be given.
- The performance will be assessed on the basis of the written elaboration, a reflection report, the presentation and discussion. For the reflection report (group process and own role), the students are given guiding questions at the beginning of the project (appendix). The reflection report is submitted with the written elaboration. The teacher should also give feedback on the group process from his/her perception during the project. The grading of the reflection report is explained in Annex 1.
- Particular importance is attached to methodological and social competences as well as personal competences in the evaluation criteria, as these cannot be developed in other forms of teaching (lectures, exercises). In the ADP, technical skills take a back seat, as these are the focus of other courses.
- In a pedagogical sense, it is important to give individual feedback on the respective evaluation points, regardless of the grade. This gives students a better understanding of the individual aspects that can be improved. This understanding allows students to adopt their own improvement strategies in order to increase their professionalism.

The evaluation form and a detailed description of the assessment levels can be found in **Appendix 1**.

In addition, an explanation of the evaluation of the reflection report can be found in the annex.

# 3 Advertising/Publication of the ADP

In order to find students for the project as quickly as possible, it is advisable not only to post the assignment on the bulletin board in the department, but also to publish the assignment on websites frequently used by students – both in German and in English.

- Overview of student project work on the department's website → **LINK**
- On your own → institutes website in the "Studies" section
- Mechanical Engineering Forum → **Website**
- If you like, on LinkedIn

If you are specifically looking for students who have attended certain courses, you can contact the respective lecture supervisors. Ideally, you can then hand in a (PowerPoint) slide to the supervisor and he or she will place the slide before (and after) the lecture.

# 4 The Kick-Off

A well-prepared kick-off is often an essential prerequisite for a successful ADP. The supervisors should take into account the special features of the group.

In the event that the members of a group do not know each other beforehand, the getting-to-know-you phase and the communication of goals are of utmost importance. A group can only function well when effective communication has developed in the group. To do this, the participants must form a basis of trust in a getting-to-know-you phase. Of course, this includes mutual respect and understanding. Of course, the kickoff can be shortened by the phase of getting to know each other if all members of the group already know each other.

It's also important for any ADP group to understand the requirements of the task and project working methods. After all, Organisational matters and cooperation must be clarified.

This is followed by a methodological proposal for a kick-off with a group whose members do not know each other. This variant of the kick-off lasts 4 hours. If necessary, elements can be shortened. Ctrl-clicking in this table will take you directly to the respective section of the kickoff.

| | |
|---|---|
| 10‘ (0:00) | Welcome and introduction; Presentation of the agenda and goals of the kick-off |
| 120‘ (0:10) | Goals & Expectations |
| 20‘ (2:20) | Methods of cooperation |
| 70‘ (2:40) | Define joint collaboration |
| 10‘(3:50) | Closure |

| Dura-tion Time | Unit: Content & Method | Notes | Material/ Medien | Goals |
|---|---|---|---|---|
| 10‘ (0:00) | **Welcome and introduction; Presentation of the agenda and goals of the kick-off** | | | |
| 7‘ | Greeting:<br>• Introduce yourself as a supervisor<br>• Have name tags written (including yourself)<br><br>Propose agenda:<br>• Goals and expectations<br>• Methods of teamwork<br>• Define collaboration<br>• Organisational<br>• Graduation<br><br>Introduce goals:<br>• Successful start to the project<br>• Know expectations, tasks and roles<br>• Making initial arrangements<br><br>Clarify Organisational matters:<br>• Time frame of the kickoff | The kick-off begins even before this sequence. As soon as the participants enter the room, they should feel welcome, in good hands and oriented. The room and the required media/materials should therefore be prepared in advance if possible.<br><br>Take enough time to introduce the people, the agenda and the goals. This increases the acceptance of the kick-off and lays the foundation for a good atmosphere. | Flipchart "Goals & Agenda" | Create a working atmosphere<br>Provide Organisational orientation<br>Explain goals and process |

| Duration Time | Unit: Content & Method | Notes | Material/ Medien | Goals |
|---|---|---|---|---|
| 120‘ (0:10) | **Goals & Expectations** | | | |
| 40‘ | **Transition:** *"For a successful project, it is important that the team members know each other well enough that they can work together productively. In addition, it is interesting for me as a supervisor to find out what experiences they have already had with teamwork. This is exactly what we want to dedicate ourselves to first."*<br><br>**Getting to know each other method profile:**<br>In partner work, participants create a profile/fact sheet for their work partner: e.g. with the following questions:<br>1. Name<br>2. He/she would like to bring these strengths and resources into the teamwork<br>3. Team members should know about these specifics/special needs<br>4. He/she is looking forward to this<br><br>Afterwards: Partners introduce each other to the plenary. To do this, the flipcharts should be hung on pin boards or walls if possible | The comparison of expectations and the things that each participant brings to the table is very important at the beginning of a project work, as this can already prevent possible conflicts (e.g. person 1 only wants to pass, person 2 absolutely wants a grade of 1.0)<br><br>Although they give the floor to the participants, they are available for questions all the time and observe the work process and progress<br><br>This part can be omitted if all project participants already know each other well.<br><br>***Time*** *Initiating the Method 05 min*<br>*Creation of profiles 10 min*<br>*Presentation in plenary 15 min* | 1/2 empty Flipchart per Person;<br>Pens for every person<br>Pin boards with pins or space on wall with tape<br>Flipchart „fact sheet“ | • Ice breaking<br>• Warm<br>• Getting to know the participants<br>• Experience and align the individual expectations of the group members |
| 5‘ | **Clarify the requirements of the institute** | It is important to emphasise that it is not only the technical skills that are to be expanded, but that the teamwork aspect is just as important and a | Evaluation Form | Participants know the learning objectives and expectations of the |

| Duration Time | Unit: Content & Method | Notes | Material/ Medien | Goals |
|---|---|---|---|---|
| | **Clarify the learning objectives of the ADP** (e.g. teamwork, during which project methods are to be learned and applied, see module description)<br><br>**Clarify the evaluation method using the evaluation sheet** | learning objective. This sets a different focus for the students. | | department and can meet them |
| 5‘ | **Transition:** "*Now that they have gotten to know each other a bit, I would also like to briefly introduce my role and expectations.*"<br><br>**Clarify role and expectations**<br><br>The supervisor<br>• formulates their own expectations of the participants/project group<br>• formulates the support and support services that students can take advantage of during the cooperation<br>• formulates which care and assistance services he/she will <u>not</u> bring in<br>At the end, the question should be asked again whether the participants conform to the type of supervision. If the participants have objections, it can be discussed how the cooperation can be arranged so that everyone is satisfied in the end. | A visualization of the expectations, as well as the offers of help is useful. (Presentation or prepared flipchart).<br><br>If the participants have objections to expectations, you should make it clear where there is room for manoeuvre and thus respond to the wishes of the participants within your own limits. | Expectations on Moderation Cards/Flipchart | Participants know the expectations of the supervisor, as well as the offers of help |
| 30‘ | **Students' own goals (optional)**<br><br>The participants are guided to derive common goals from their personal project goals that everyone can support. These are visualized on a prepared metaplan board with the help of moderation cards. | First of all, it is about goals at a higher level, e.g. "I want to achieve a very good grade." | Moderation cards<br><br>Paper-covered metaplan wall (See Illustration in the appendix) | The participants compare their project goals with each other and agree on common goals |

| Dura-tion Time | Unit: Content & Method | Notes | Material/ Medien | Goals |
|---|---|---|---|---|
| | **Step 1:**<br>Each participant writes personal goals for the project and project work on metaplan cards<br>**Step 2:**<br>The participants put all the goals on a table (briefly introduce them) and stand around the table<br>**Step 3:**<br>The goals are clustered based on commonalities<br>**Step 4:**<br>The goals are visualized on a facilitation wall (pay attention to positive formulations, e.g. "pass" instead of "do not fail")<br><br>If participants have difficulties working on them, the following questions can be helpful:<br>• Assuming they have experienced a successful project at the end, what have they achieved?<br>• When you tell friends about your project at the end, what made the project successful?<br>• Assuming the project had failed, what would have happened? (Then rephrase that positively)<br><br>If the participants have different opinions on one of the common goals, how would the goal have to be | When it comes to the goals, care should be taken to ensure that everyone is willing to bear the goals. So it makes sense to get the consent of each group member for each recorded goal<br><br>When a goal is devalued: "Whose goal is this? Do you agree?"<br><br>Although they give the floor to the participants, they are available for questions all the time and observe the work process and progress<br><br>***Time*** *Initiating the Method 3 min*<br>*Step 1 5 min*<br>*Step 2, 3 & 4 15min*<br>*(+7Min buffer)* | | |

| Dura-tion Time | Unit: Content & Method | Notes | Material/ Medien | Goals |
|---|---|---|---|---|
| | formulated so that everyone can support it? What would you need to be able to carry the goal together? | Depending on how united the group is in its goals, it takes longer or shorter | | |
| 30‘ | **Define Project Goals from Task**<br><br>The supervisor explains the task again (if necessary) and answers questions about it.<br><br>The participants work out the most important project goals from the task and visualize them on the same metaplan wall as the personal project goals (column next to it).<br>If participants have difficulties working on them, the following questions can be helpful:<br>• What is the task about?<br>• What interim results are expected and in what form?<br>• Which binding levies must be complied with and in what form? | Make sure that the requirements and goals are formulated clearly and finely enough (with intermediate steps and deadlines)<br><br>Although they give the floor to the participants, they are available for questions all the time and observe the work process and progress<br><br>***Time*** *Initiating the Method* *5 min*<br>*Performance* *25 min* | Task<br><br>Paper-covered metaplan wall (See Illustration in the appendix) | The participants know the goals from the point of view of the task<br><br>The entry into project work is made easier by making the direction of the project clear |
| 10‘ | **Pause** | | | |

| Duration Time | Unit: Content & Method | Notes | Material/ Medien | Goals |
|---|---|---|---|---|
| 20‘ (2:20) | Methods of cooperation | | | |
| 15‘ | **Transition**: *"Now that you have already laid an internal team-internal foundation for your teamwork, I would now like to give you a few more methods that promote successful teamwork."*<br><br>**Methods of project management and teamwork**<br><br>The following methods will be presented by the supervisor:<br>• Project plan<br>• To-do list<br>• Agile Project Management Methodologies<br>• Milestones<br>• Moderation | Here you should decide whether you want to present several methods superficially or work out some methods in detail. Especially in very open projects with a freer way of working, it may be appropriate to offer a variety of methods. If you can estimate which methods are relevant in the specific project, an individual selection can be made. | PowerPoint presentation or prepared flipcharts on the individual methods<br><br>Handout on the individual methods | The participants know the first methods for good cooperation |
| 5‘ | **Transition**: *"In addition to these more specific project methods, there is another method that you all know, which is essential for good cooperation and which is nevertheless often not used in practice, or in the heat of the moment, in a solution-oriented way – feedback."*<br>**Give feedback**<br>Question to the plenary: | Participants often criticize the fact that something positive should also be reported back in the feedback. The following reasons can be given for this:<br>• If you say something positive at first, you have a *foot in the door/ open your ears* to what is to come<br>• You can develop on different levels: either you try to eradicate your weaknesses or you continue to build on your strengths – I need feedback for both | Flipchart on which the feedback rules can be noted<br><br>Photograph afterwards | The participants worked out rules of good feedback |

| Dura-tion Time | Unit: Content & Method | Notes | Material/ Medien | Goals |
|---|---|---|---|---|
| | How does feedback have to be formulated so that you can accept it? From this, work out the criteria for good feedback with the participants:<br>• Give feedback:<br>  ○ Positive and critical aspects feedback<br>  ○ Emphasise subjectivity through *I-messages,* not generalise it<br>  ○ Describe concrete behavior with examples<br>  ○ Always supplement criticism with a suggestion for improvement<br>• Accept feedback<br>  ○ not immediately justify - questions of understanding are allowed<br>  ○ Feedback is listening to a gift → and then deciding what you want to implement | • If the positive aspects are not praised, the probability of occurrence in the future may decrease | | |

| 70‘ (2:40) | Define joint collaboration | | | |
|---|---|---|---|---|
| 40‘ | **Transition:** *"Now you've heard some general methods that can help you work together. For good cooperation, however, it is also important that you define common behaviors in order to avoid conflicts and make the cooperation fruitful. You will be given time for that in the following."*<br><br>**Shaping cooperation – making agreements**<br>**Header Method:**<br>**Step 1**: The participants write their no-go's of teamwork on moderation cards: what has to happen that they drop out of the group work/ that the teamwork flops/ that they disconnect (here it can be helpful to think about past group work that went badly).<br>**Step 2:** The participants present their no-go's to each other and derive rules from them<br>**Step 3:** The rules are visualized on the metaplan wall, where the goals have already been formulated. The agreements should be formulated positively (do not interrupt vs. let them finish) and be as concrete as possible (polite interaction means letting them finish, ...)<br>**Step 4**: All participants signal the commitment by show of hands/signature/... and agree on how to deal with non-compliance. | It is important that the agreements are formulated and visualized by the participants themselves.<br><br>Nevertheless, you should make sure that the wording is positive and concrete.<br><br>***Time*** *Initiating the Method*<br>*5 min*<br>*Individual work (mod cards)*<br>*7 min*<br>*Performance*<br>*25 min*<br>*Conclude*<br>*3 min* | Paper-covered pin board board (See Illustration attached) or whiteboard / blackboard,<br>Moderation cards,<br><br>Photograph afterwards | Make working arrangements |
| 15‘ | **Transition:** *"Now that you've thought about how the entire group can work together, let's move on to different roles and tasks for your team and your project work."* | Examples of functions/roles can be:<br><br>• Coordinating the process | **Flipchart with heading: "Tasks and functions in the team"** | The participants have thought about a possible and preliminary division of roles/tasks |

| | | | | |
|---|---|---|---|---|
| | **Tasks/functions in the team**<br>What tasks and functions in the team should be performed in order to shape the teamwork and complete the project well?<br><br>**Shout-out question**<br>• Tasks and functions that will be required in the course of the project are collected by means of a call query<br>• Team then discusses how the tasks/functions will be distributed | • Obtain expertise<br>• Moderate<br>• Reporting / Documenting<br>• Implement tasks<br><br>A final decision does not necessarily have to be made here. It's about finding a first weighting and dealing with it. In fact, it makes sense to keep an eye on the distribution of roles and tasks during the course of the project and to adjust them if necessary) | | Participants are aware that a functioning team involves different roles/responsibilities |
| 10‘ | **Organisational matters, e.g.**<br>• Instruction manual (documentary)<br>• Project folder (or Hessenbox etc.)<br>• IT-Account<br>• Safety briefing (office & hall)<br>• Installation benötigter Software<br>• Make a regular appointment<br>• Type of collaboration (digital/face-to-face)<br>Here, Organisational points such as regular meetings, contact platform, etc. can be discussed. | | Protokoll in Notebook | The team members have room to clarify Organisational matters<br><br>Teamorganisation initiieren |
| **10‘ (3:50)** | **Closure** | | | |
| 7‘ | **Take-home message and conclusion** | Depending on the time, a limitation of the speaking time (e.g. one word/sentence each) should be considered | | |

| | | | | |
|---|---|---|---|---|
| | In a short round of flashlights, the participants individually formulate what they take away from the kick-off | | | |
| 3‘ | Feedback on the kick-off<br><br>As they leave, the participants are asked to give their feedback on the kick-off. To do this, they are asked to fill out the feedback flipchart, which is next to the door | | Flipchart see 5): | |

**Note:**

This kickoff can be expanded to include the following topics if required:

1. Project Management Methods
2. problem-solving phases; Team development (e.g. Tuckman) or group phenomena
3. Creativity and decision-making techniques

Ideally, one or the other method will then be tried out in real life

## Suggestions for flipcharts

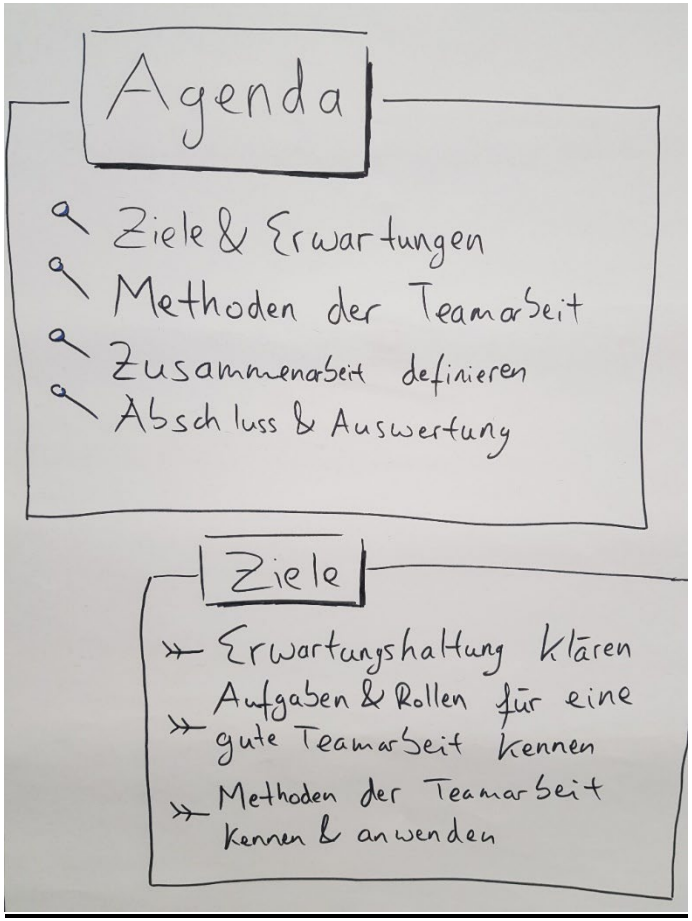



Figure 1. Flipchart "Agenda and Goals"

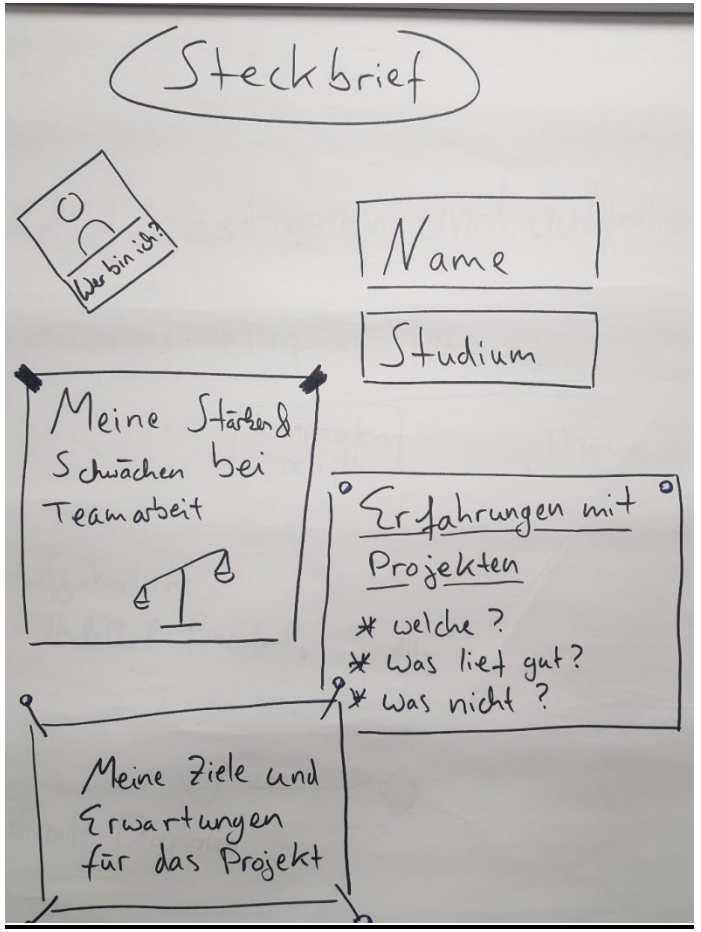



Figure 2. Flipchart "Profile/Fact sheet"

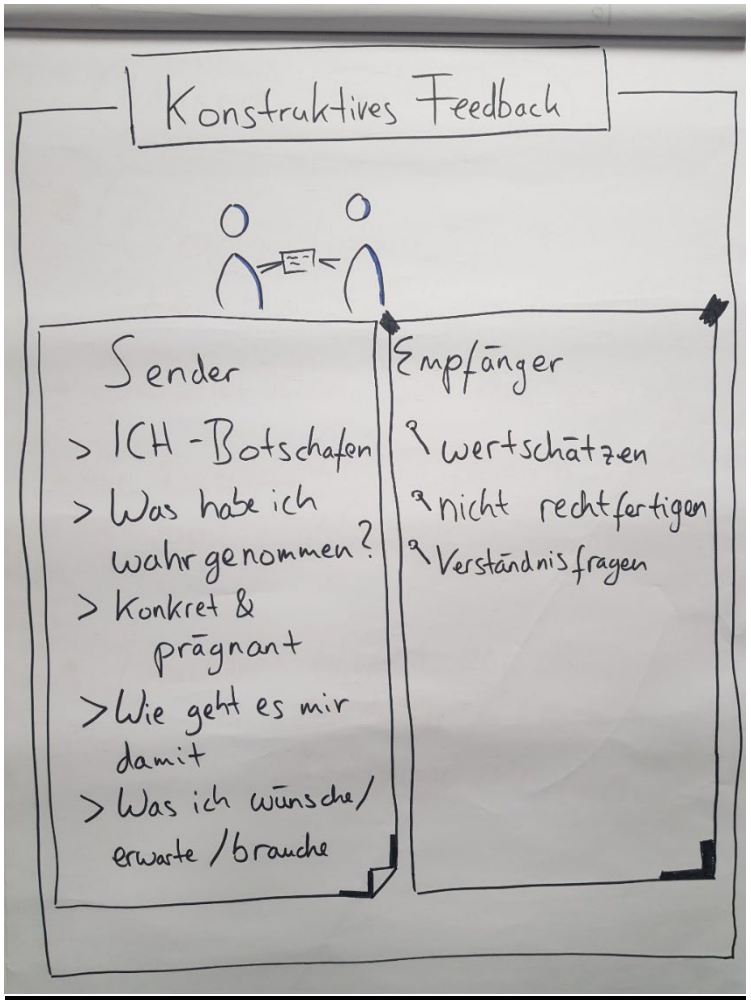



Figure 3. Flipchart "Constructive Feedback"


Figure 4. Metaplan wall on goals and agreements: Source:

https://de.wikipedia.org/wiki/Datei:Pinwand_leer.jpg – angepasst

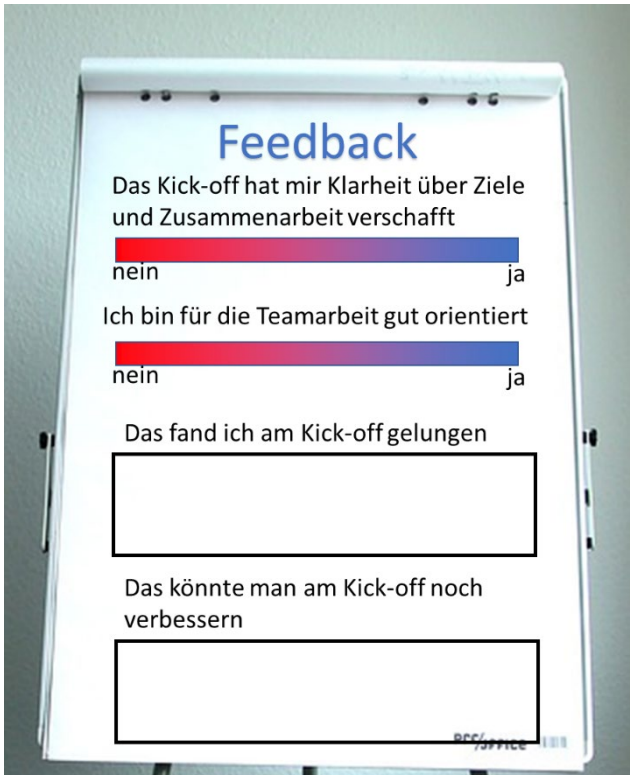



Figure 5. Proposal for a flipchart for kick-off feedback - modified according to https://www.maxpixel.net/Presentation-Flipchart-Present-Label-Board-Leaf-2537709

## Special features for multinational groups

A guide on this topic compiled by ZIKK can be found in the download area for teachers *(available in German only, July 2025)*

A working group that has members from different countries or cultures can offer an excellent opportunity to learn something for multinational cooperation in the future professional career. Almost all future engineers will later have to work with people from other cultures in their practice. It must be assumed that multinational cooperation often fails not because of the expertise, but because of the intercultural competence of the participants. This makes it all the more important that students have the opportunity for intercultural learning during their studies and that they become aware of this opportunity.

**Recommended reading:**
Klippel, Johanna (2015): "This was the best learning aid for German for me" – Requirements for L2 acquisition in university group work, in: Merkelbach, Chris (ed.): Learning more languages – teaching more language(s)

German students often assume a position of cultural dominance: they expect students from abroad to adapt to their usual way of working. The idea that they too could benefit from other approaches is alien to them at first. Students with incomplete language skills often see them as an obstacle and then assign them unpopular tasks in which they provide them with little support. This often leads to annoyance among students who are quite new to Germany (cf. Klippel 2015).

In addition, German students sometimes react annoyed and have little patience. The fallacy of a lack of language skills for a lack of cognitive abilities is very obvious. Misunderstandings are not addressed, anger is swallowed and complaints are expressed behind the backs of those affected. Students from abroad feel insecure and dare all the less to contribute their knowledge and demand their demands (cf. Klippel 2015). Difficulties in multicultural teams arise on many levels, e.g. in verbal and non-verbal communication or paraverbal communication (voice pitch, resonance chamber and speech behavior such as articulation, volume, speech speed and speech melody ). Problems can also arise when selecting and sharing information.

As a supervisor, you should keep an eye on these warning signs to prevent difficulties:

1. Do the same problems or conflicts repeatedly arise in the multicultural group?
2. Are stereotypes about people of other nationalities constantly used to justify problems?
3. Is the behavior of a student from another country considered strange or inexplicable by other members?
4. Is the group divided along national or cultural lines on certain issues?

5. Do students in some countries rarely speak or express their opinions at meetings?
6. Is the distribution of roles unclear?
7. Do team members agree on goals but can't agree on how ?

As a supervisor, you can prepare and support multinational groups in the following ways:

- Push for a clearly defined distribution of tasks and roles (in which role do you have which tasks and which don't?).
- Encourage students to make private contacts as well.
- Organize communication routines (e.g. always post logs immediately for everyone on a specific platform).
- Work out a work routine together (e.g. When do we meet, where and who is prepared and how? What happens today?).
- Make sure that all students are involved in the decisions.
- Encourage students to learn from each other.
- It takes longer to formulate in a foreign language – Remind students to wait patiently for input from foreign students. They would also be happy about it abroad. It can also be an opportunity to communicate within the team (temporarily) in a language other than German. Students of the Master's program in Aerospace Engineering often have no knowledge of the German language. In this case, the project language should be English.
- Make sure that the students regularly exchange ideas in the team about how their cooperation is going. Each team member should comment on the following questions:
    - What went well in the last phase of work and should be maintained?
    - What didn't go so well in the last phase of work and should be improved?
    - How do we want to work together in the next phase of work – how do we want to optimize cooperation?
- Keep yourself and the students aware that there is no such thing as "the Chinese", "the German" or "the Spaniard", but that people from the same cultural background can nevertheless be very different individually.
- Celebrate successes together.

The kick-off with the group is particularly important in order to create a basis of trust. Essential rules of communication and conduct should be clarified here in order to avoid misunderstandings regarding

cultural differences. However, be aware that different cultures may have different ideas about successful teamwork that team members do not need to be aware of. Everyone thinks they have the same ideas about productive collaboration. However, this is a fallacy. Therefore: make sure that the team members exchange ideas at the beginning about what each of them understands by good team and project work. In a second step, you then follow up with the question of the extent to which the team members notice similarities and differences and how the group wants/should deal with them. It is always helpful to have a few team rules set and put them in writing.

It is very important to plan enough time for this in the kickoff and to use suitable methods to create a common basis.

You can recommend that your students take part in intercultural training at the Language Center:

Current dates can be found under http://www.interkulturelle-kompetenz.tu-darmstadt.de

# 5 Reading tips and workshops on the topic

### Supervising study projects

Online article

Higher Education Didactic Office (2019): Designing Study Projects. What is meant by a study project and what are the advantages of this teaching/learning format? Technical University of Darmstadt. Available online at **https://www.einfachlehren.tu-darmstadt.de/themensammlung/details_14208.de.jsp,** last updated on 29.07.2019.In this internet source you will also find further interesting literature references.

Workshop

"Supervision of student project teams at FB 16": takes place approximately every 2 years, also on request(
contact: rehwald@mechcenter.tu-darmstadt.de)

### Project management

Master's students are to be introduced to project management methods by working on ADPs and enabled to successfully manage their own projects through the use of useful instruments. Learning project management is an explicit learning goal of the ADPs.

**Essential components of project management are:**

1. Team building,
2. Formulate project goals,
3. Create a work breakdown structure,
4. formulate work packages including effort and duration estimates,
5. Create a task list,
6. Network or Gantt chart (Gantt chart) or agile project management methods;
7. Project monitoring and control,
8. In a final summary (lessons learnt), the planning and the actual course of the project will be reported.

**Documents on project management can be requested from the Institute of Ergonomics (IAD) at the Department of Mechanical Engineering.**

Contact:

M.Sc. Tim Steinebach

Institute of Ergonomics | Phone 06151 16-23118

t.steinebach@iad.tu-darmstadt.de | www.arbeitswissenschaft.de

In addition, the graduate organization **Ingenium** at TU Darmstadt offers workshops on this topic by trainers from industrial practice. Information on the training program and current dates can be found on the Ingenium website.

# 6 Contact

**MechCenter**
Faculty 16 | Mechanical engineering
L1|01 123
Otto-Berndt-Str. 2
64287 Darmstadt

**Dipl.-Ing. Sonja Rehwald**
Phone: +49 (0) 6151 16-26100
Mail: rehwald@mechcenter.tu-darmstadt.de

**University Didactics Office**
S1|03 154
Hochschulstraße 1
64289 Darmstadt

**Dr. Annette Glathe**
Phone: +49 (0) 6151 16-75045
Mail: annette.glathe@ tu-darmstadt.de

**Authors (Nov 2011):**

| | |
|---|---|
| Karen Lange-Morales | FB 16, IAD |
| Marcus Lopes | FB 16 CSI |
| Alexandra Feith | FB 16 IAD |
| Michael Mularczyk | FB 16 MPA |
| Barbara Seifert | FB 16 MechCenter |
| Hanns A. Stoffregen | FB 16 PTW |
| Dr. Annette Glathe | HDA |
| Daniel Völker (Nov 2018) | FB 16 PTW |

**Revision (August 2019 and April 2024):**

| | |
|---|---|
| Sonja Rehwald | FB 16 MechCenter |
| Dr. Annette Glathe | HDA |
| Dr. Christoph Merkelbach (2017) | Language Center |

# Appendix 1 Performance Assessment of ADPs

## Instructions for reflection in the project (group process / own role) for students

The present guiding questions serve as a basis for the reflection work in the ADP, which you submit individually to your supervisor in addition to the written elaboration.

Please describe on at least 2 pages (Arial 10 pt, 2.5 cm margins) how you retrospectively assess your group process as well as your own role in the project and what you have learned about it. You should not mention your team members by name, but e.g. "Student A, B, C..." indicate.

The following guiding questions should serve as a stimulus for reflection.

When you look back on your project...

**Group Process:**

1. What impression did you have of your cooperation in the team as a whole? What surprised you? What is very good, what is less successful?
2. What was the division of tasks in terms of content and what was the distribution of roles in the management of the team (e.g. on the social level[1], moderation, management function)? How did you use/develop the skills of the team members?
3. How did you make decisions in the team?
4. Where were there conflicts, disruptions or difficulties in cooperation and were you able to resolve them? If so, how? How could you avoid/solve such difficulties in the future?
5. If you were to start an ADP/ARP again, what would you do differently at the group level?

**Own role in the team:**

6. How do you assess your own role in the group?
7. How did you get involved? Where not?
8. How did you manage to represent your own ideas to the group? Describe a specific situation.
9. What strengths and weaknesses have you become aware of in yourself in relation to group work? Where do you still see a need for development in yourself?
10. If you were to do such project work in a team again, what would you change about your behavior in the group?

## Explanations on the evaluation of the reflection report for supervisors of project work

Stand: 20.02.2013 ; Autorin. A. Glathe, HDA

The reflection report is a very important component in the assessment of students' social skills and self-competencies in project work. The expansion of these competencies plays a prominent role in the ADP in addition to technical

[1] E.g. encouraging or integrating others, contributing to conflict resolution, responding to problems, questions and needs of others

competencies, as they cannot or hardly can be developed in other forms of teaching (lectures, theses). The following evaluation levels apply to the evaluation of the reflection report (group process and own role).

| Reflection | 0Points | 1Point | 2Points | 3Points | 4Points |
|---|---|---|---|---|---|
| **Reflection on the group process and one's own role (in the self-reflection report)** | only superficial retrospective; no critical analysis; no evaluation of one's own approach; no identification of improvement measures; has not formulated its own direction of development | | describes in a differentiated way; some analysis; proposes individual improvement measures; formulates individual ideas for their own further development | | Describes in a highly differentiated way; Analysis of the reasons and the consequences for the procedure, evaluation of the procedure with regard to goal-oriented and successful, identification of several improvement measures; Formulation of several ideas for your own development direction |

Explanation: "Development direction": Student describes how he/she wants to change his/her future behavior (e.g.: "I will be more involved in team discussions in the future")

**Note 1: The guiding questions for the reflection report should be handed out to the students at the beginning of the project, so that they pay attention to how they work together during the project. It is also important that the supervisor gives feedback on the group process from his or her outside perspective during the project.**

**Note 2: Students are often not used to thinking critically about themselves or a group in writing. Therefore, the requirements and the evaluation of the reflection report should be explained in advance in a conversation with examples .**

**Negative examples:**

"In the future, I have to work more disciplined"

This example is incoherent at the end of the text. As a reader, you cannot see which specific behavior has led to which problems and why the direction of development is proposed.

"We have always worked together very successfully as a team and we enjoyed the work."

This example is too undifferentiated and does not describe concretely

The candidates do not receive any points for these passages.

**Positive examples:**

"It was important to me to integrate all team members and to let everyone have their say at every meeting. However, I had to realize that this could be very time-consuming under certain circumstances and not always compatible with achieving a goal quickly. In one of our team meetings, we spent an hour discussing a small problem. We then realized that we had to think beforehand about which points in a meeting were so important that we should take the time to weigh up all opinions. We then simply decided other points briefly by vote."

"So it wasn't always easy with the decision-making process. We tried to make our decisions together, taking into account every single opinion. This was hardly possible anymore, especially when we had to work under extremely loud ambient conditions under high time pressure in the factory hall of company xy. I had to learn to make the right decision quickly, either on my own or with isolated consultations, but over time I got used to it and I was able to defend my decisions in front of the group."

These examples describe developments that are described in a comprehensible and differentiated way for readers

"I always see my biggest weakness in my lack of ability to express criticism of team members. For example, I didn't manage to tell student x that I don't think it's fair that he goes on a skiing holiday in the final phase. I find it difficult to strike the right tone here and also see the greatest need for further development here."

A concrete direction of development is described here.

For passages of this kind in the reflection report, the candidate receives one point, for two such passages 2 points, and so on, for 4 or more such passages 4 points.

| **Bewertungsbogen für Advanced Design und Advanced Research Projects FB 16** | | |
|---|---|---|
| | | 02.01.2017 |
| **Titel des ADP:** | ADP/ARP xyz | Instituts-logo |
| **Name, Vorname:** | Studierender A | |

| **Bereich** | **Gew.** | **Einzel-gew.** | **Kriterium** | **Bewertung [0-4]** | **Gew. Bewertung** |
|---|---|---|---|---|---|
| **Inhaltliche Bearbeitung** | **0,20** | | | | |
| | | 0,050 | Kreativität / eigene Ideen | | 0,00 |
| | | 0,050 | Anwendung von Fachwissen | | 0,00 |
| | | 0,050 | Klärung der Aufgabenstellung und Zielsetzung | | 0,00 |
| | | 0,050 | Analytisches Denken | | 0,00 |
| **Qualität der Arbeitsergebnisse** | **0,10** | | | | |
| | | 0,033 | Lösungsgrad | | 0,00 |
| | | 0,033 | Wissenschaftlichkeit der Arbeitser-gebnisse | | 0,00 |
| | | 0,033 | Umsetzbarkeit /Verwertbarkeit | | 0,00 |
| | | 0,000 | *spezifisches Kriterium des Lehrstuhls (optional)* | | 0,00 |
| **Arbeitsstil** | **0,20** | | | | |
| | | 0,040 | Methodisches Vorgehen | | 0,00 |
| | | 0,040 | Einsatz von Projekt-managementmethoden | | 0,00 |
| | | 0,040 | Motivation für das Projekt | | 0,00 |
| | | 0,040 | Selbstständigkeit | | 0,00 |
| | | 0,040 | Zeitmanagement | | 0,00 |
| **Kooperation** | **0,10** | | | | |
| | | 0,025 | Aufgabenteilung | | 0,00 |
| | | 0,025 | Kollegialität (Außensicht) | | 0,00 |
| | | 0,025 | Kooperation und Kommunikation extern (mit Betreuer / externem Partnern) | | 0,00 |
| | | 0,025 | Kompromisse / Konfliktlösung | | 0,00 |
| **Bewertung der Reflexion** | **0,05** | | | | |
| | | 0,050 | Reflexion des Gruppenprozesses und der eigenen Rolle (Selbstreflexionsbericht) | | 0,00 |
| **Schriftliche Ausarbeitung** | **0,15** | | | | |
| | | 0,025 | Struktur / Gliederung | | 0,00 |
| | | 0,025 | Vollständigkeit | | 0,00 |
| | | 0,025 | Interpretation von Ergebnissen und Methoden | | 0,00 |
| | | 0,025 | Sprachstil | | 0,00 |
| | | 0,025 | Wissenschaftliches Arbeiten | | 0,00 |
| | | 0,025 | Äußere Form | | 0,00 |
| **Bewertung vor Kolloquium** | | | Summe erreichte Punktzahl (gewichtet) | | 0 |
| | | | Summe max. mögliche Punktzahl (gewichtet) | | 3,2 |
| | | | erreichte Punktzahl normiert | | 0,0% |
| | | | **Note vor Kolloquium** | | **5,0** |

| **Kolloquium / Vortrag** | **0,20** | | | |
|---|---|---|---|---|
| | 0,033 | Struktur | | 0,00 |
| | 0,033 | Sprachstil / Vortragsstil | | 0,00 |
| | 0,033 | Foliengestaltung | | 0,00 |
| | 0,033 | Auswahl präsentierter Inhalte | | 0,00 |
| | 0,033 | Zeitmanagement beim Vortrag | | 0,00 |
| | 0,033 | Diskussionsverhalten | | 0,00 |

| | | |
|---|---|---|
| **Gesamtbewertung** | Summe erreichte Punktzahl (gewichtet) | 0 |
| | Summe max. mögliche Punktzahl (gewichtet) | 4 |
| | erreichte Punktzahl normiert | 0,0% |
| | **Endnote** | **5,0** |

Evaluation scheme

| Note | | Percent |
|---|---|---|
| 1,0 | >= | 90,5% |
| 1,3 | >= | 86,0% |
| 1,7 | >= | 81,5% |
| 2,0 | >= | 77,0% |
| 2,3 | >= | 72,5% |
| 2,7 | >= | 68,0% |
| 3,0 | >= | 63,5% |
| 3,3 | >= | 59,0% |
| 3,7 | >= | 54,5% |
| 4,0 | >= | 50,0% |
| 5,0 | < | 50,0% |

This Excel sheet was created by: Sebastian Gramlich, PMDStand: Nov 2016

The questionnaire must be completed individually for each project member, whereby the evaluation of the criteria may be identical for all group members if no differences have come to light within the group.

## Appendix 2 Evaluation criteria for ADPs on FB 16

| Range / Weight | Criterion | 0 | 1 | 2 | 3 | 4 | Elucidations |
|---|---|---|---|---|---|---|---|
| | | **The rating levels for very poor (0), medium (3) and very good (4) performance are described here; achievements in between are to be awarded points of 1 or 3.** | | | | | |
| **Content editing0.20** | | | | | | | |
| | **Creativity / own ideas** | no own ideas; reproduces what is known; inability to transfer what is known to new tasks | | sufficient new ideas; can usually transfer familiar things to new tasks | | brings many and good new ideas; inventive; cleverly develops something new from the familiar | |
| | **Application of expertise** | No transfer of basic knowledge to the problem | | With assistance: applies basic knowledge to obvious questions and expands specialist knowledge | | actively uses basic knowledge; intensively opens up and combines new fields of knowledge | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Clarification of the task and objectives** | Problem definition is not analyzed; no objectives worked out or objectives not recognizable | | The problem is sometimes questioned; Objectives are worked out with assistance | | problem is abstracted in a meaningful way; clearly demarcates; Objectives are derived and prioritized directly and completely from this | |
| | **Analytical thinking** | showed no approaches to analyze complex problems in a meaningful way | | shows satisfying approaches to analyzing complex problems | | analyses complex problems and establishes links between them; actively reflects on this process | |
| **Quality of work results0.10** | | | | | | | |
| | **Solution level** | thesis only incompletely processed; essential work packages are missing | | thesis largely fully processed; completeness is missing in some work packages | | work packages are fully and flawlessly processed; additional essential work packages | |
| | **Scientific nature of the work results** | unsubstantiated claims; erratic or incomprehensible argumentation | | concise justifications, but essentially acceptable | | scientifically substantiated statements; Clearly proven and comprehensible | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Feasibility / Usability** | useless results | | Results partially implementable/usable; Rework required | | Results conclusive and fully implementable/usable; no significant rework required | |
| | ***specific criterion of the chair (optional)*** | | | | | | |
| **Work Style0.20** | | | | | | | |
| | **Methodological approach** | erratic approach; little logic recognizable; No planning and no methodical approach | | structured approach predominates, methodology recognizable, but not optimal; Weaknesses in planning | | proceeds methodically; plans, establishes and develops systematically | |
| | **Use of project management methods** | No use of project management methods recognizable | | Project management methods are partly used and mostly used correctly | | Project management methods are selected and used correctly in a targeted and problem-specific manner | Explanation of project management methods:- Formulating project goals- Creating a work breakdown structure- Formulating work packages including effort and duration estimates- Creating a list of tasks- Network or Gantt chart (Gantt chart)<br>- Project monitoring and |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | | control- Project documentation |
| | **Motivation for the project** | shows no interest, commitment; seems listless; Permanent and intensive motivation by supervisor required | | Basic interest / commitment generally present; in the event of "setbacks"/difficulties, occasional motivation by the supervisor is required | | shows a high level of interest and commitment (e.g. voluntary additional work); Students motivate each other | |
| | **Independence** | waits for instructions; must be pushed; seems helpless; lets a lot of time pass unused; Supervisor must provide considerable assistance in case of problems | | independent processing of essential parts of the work; Supervisor must occasionally provide assistance in case of problems | | hardly needs any help; independently looks for solutions to problems; is very active | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Time management** | recurring stagnation recognizable; unjustified delays; Work (intermediate) results are not submitted on time or end up in considerable time trouble | | isolated stagnation is recognizable, but is usually made up; Results are mostly delivered on time | | exemplary timing; continuous sequence of results; Results are always delivered on time; Time for reflection/critical consideration of the results always available/planned | |
| **Cooperation 0,1** | | | | | | | |
| | **Division** | Tasks are assigned in the ges. Group edited or distinctly, unbalanced workload; No mutual insight into the work packages | | Task load partly unbalanced; Results are only partially merged and coordinated; Group members have partial insight into each other's work packages | | sensible division of labor; even workload; special skills are integrated; all students have an overview of all work packages; Regular compilation of work results | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Collegiality (external view)** | no respectful interaction with each other; work against each other; no mutual support recognizable | | largely respectful interaction with each other; mutual support is given in decisive points | | respond to each other; appear closed to the outside; constructive, respectful interaction with each other; willing mutual support | |
| | **Cooperation and communication externally (with supervisor / external partner)** | does not take up any suggestions or hints; rude or dismissive communication style | | responds to most of the suggestions, but does not always process them consistently | | likes to cooperate with others, but only in a targeted and task-oriented manner; approaches others willingly; immediately picks up on other ideas; Polite, approachable communication style | |
| | **Compromise / Conflict Resolution** | Conflicts in the group remain unresolved; hardened fronts; no agreement in the event of differences of opinion; Supervisor must intervene to resolve the conflict | | Group asks supervisors to resolve conflicts; Conflicts can be resolved in terms of the ability to work | | Conflicts were resolved constructively | Explanation: this criterion can be verified on the basis of the reflection work - Question 7 |
| **Reflexion0,05** | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Reflection on the group process and one's own role (in the self-reflection report)** | only superficial retrospective; no critical analysis; no evaluation of one's own approach; no identification of improvement measures; has not formulated its own direction of development | | describes in a differentiated way; some analysis; proposes individual improvement measures; formulates individual ideas for their own further development | | Describes in a highly differentiated way; Analysis of the reasons and the consequences for the procedure, evaluation of the procedure with regard to goal-oriented and successful, identification of several improvement measures; Formulation of several ideas for your own development direction | Explanation: "Development direction": Student describes how he/she wants to change his/her future behavior (e.g.: "will be more involved in team discussions in the future") |
| **Written paper 0.15** | | | | | | | |
| | **Structure / Structure** | structure of the work not recognizable or not comprehensible; Circumference much too long; Detailed results in the text without appendix | | Structure present and recognizable with restrictions; Scope of work justifiable; Appendix available | | a meticulous, persuasive structure that promotes understanding and facilitates reading; Concentration on the essentials in the text section; well-structured appendix with references | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Completeness** | Documentation incomplete; for the most part, the results and methodology of the procedure are not comprehensible | | in some cases, the results and methodology of the procedure are not sufficiently documented; Gaps sometimes lead to more difficult traceability | | all results are fully and comprehensibly documented; Methodology of the procedure conclusively explained | |
| | **Interpretation of results and methods** | superficial undifferentiated descriptions; no interpretation of the results or reflection of methods used; no discussion of causes; does not show any alternative courses of action | | Interpretation of the results and reflection of the methods used in basic features; partly detailed descriptions with reference to objectives, little self-critical; hardly any conclusions have been drawn or sensible alternatives for action have been shown; | | detailed, self-critical interpretation of the results and reflection on the methods used; where applicable, comparison between actual results and objectives; Causes of deviations; Identification of alternative courses of action | |
| | **Scientific work** | Hardly any literature researched and processed; Quotations not specified or marked; Inconsistent use of terminology | | literature is completely processed within the given framework; Citation incomplete | | literature extensively and independently researched and fully integrated into work; correct citation; Consistent use of terminology | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Outer shape** | significant errors in greater numbers; typography with significant flaws; Specifications of the department not observed | | few errors; generally good typography; Specifications of the department largely adhered to | | no defects recognizable; consistent, consistent and convincing typography; according to the specifications of the subject area | |
| | **Reflection on the group process and one's own role (in the self-reflection report)** | only superficial retrospective; no critical analysis; no evaluation of one's own approach; no identification of improvement measures; has not formulated its own direction of development | | describes in a differentiated way; some analysis; proposes individual improvement measures; formulates individual ideas for their own further development | | Describes in a highly differentiated way; Analysis of the reasons and the consequences for the procedure, evaluation of the procedure with regard to goal-oriented and successful, identification of several improvement measures; Formulation of several ideas for your own development direction | Explanation: "Development direction": Student describes how he/she wants to change his/her future behavior (e.g.: "will be more involved in team discussions in the future") |
| **Colloquium/ Lecture0,20** | | | | | | | |
| | **Structure** | no red thread recognizable; Context of the presented content not / only | | red thread recognizable; Task, solution path and | | short and comprehensible presentation of the problem and clear | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | difficult to understand | | solutions are usually conveyed | | formulation of the objective; Overview of the procedure; Explanation of selected results; Interpretation/evaluation of the results with regard to objective | |
| | **Language Style / Presentation Style** | read lecture; monotonous, halting or hectic way of speaking; no (eye) contact with the audience | | partly free lecture; Manner of speech has individual shortcomings; is partly in (eye) contact with the listeners | | free lecture; stimulating and engaging way of speaking; is in (eye) contact with the listeners | |
| | **Foil design** | Slides illegible or confusing; font too small; no images/graphics; inconsistent design of the slides; no core statements | | Slides are partly clear; individual graphics and images; occasionally, key messages become clear | | Slides are clear, easy to read, contain images / graphics; consistent design throughout; Key messages become clear | |
| | **Selection of presented content** | central issue missed; gets lost in minor details; No focus on essential results | | essential content is largely available; occasionally unnecessary details | | selects material results; explains details in a targeted manner in order to create understanding | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Time management during lectures** | exaggerate; must be cancelled | | Presentation clearly too short or too long | | Time limit adhered to | |
| | **Discussion behavior** | does not understand questions or cannot answer questions or avoids questions; seems helpless; reacts resistant to criticism | | answers most questions, but not always sufficiently | | answers questions competently; seeks dialogue in the discussion; is open to suggestions | |

# Appendix 3 Methods for Project Groups

In addition to project management methods, there are some group work methods that make work more efficient in the long term or serve to prevent discrepancies. The following is a selection that students can use in project work.

## 1. Methods of idea generation

### Brainstorming

Brainstorming is a proven creativity method that is very motivating because it can be used to produce many ideas in a short time.

A moderator visualizes the question.

The project group members now let all ideas come free, the moderator takes notes.

The following rules apply

- Criticism is absolutely taboo.
- New ideas and varied ideas.
- Quantity over quality
- Crazy ideas are also welcome, as they inspire and a very good idea is often found afterwards.

Only in a second step are the ideas considered more closely, then evaluated and only then is a decision made as to which solution should be chosen.

Visualization media, e.g. a flipchart and flipchart markers, are required.

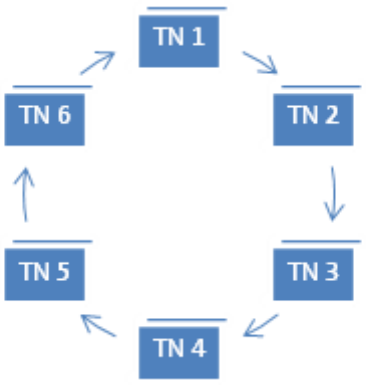
### Brainwriting

Brainwriting is a type of written brainstorming session with a little more time to think.

Each group member receives a large sheet at the beginning:

| **Participant** | **Idea 1** | **Idea 2** | **Idea 3** |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |

**An example:** 6 group members each put 3 ideas for solving the problem on paper within 5 minutes. The slips of paper then move around and are supplemented again for 5 minutes either by three new or varied ideas. In the end, a total of 108 ideas would have to be available.




Finally, there can also be an evaluation round, e.g. with points. Then the counting will take place.

Of course, the method can also be carried out with fewer participants, minutes and ideas, e.g. as a 5-4-3 or 4-5-3 method.

The method is more suitable for questions that are not very complex.

## 2. The flash light

### Abstract

By means of "flashlight", a snapshot of the current mood or opinion, etc., is to be taken in a learning group. The aspect to be examined in each case (personal aspects such as current well-being, expectations, wishes; content-related aspects such as open questions or group dynamic aspects such as conflicts, group climate) is articulated by a question or statement. Each member of the group expresses himself spontaneously through a short answer or statement.

The flash light can be used especially at the end of a group session to reflect on cooperation or when an important decision needs to be made to get everyone's opinion.

**Procedure** (basic form: linguistic illumination of an aspect addressed)

- Explain the rule for the flash:
  - Only one person speaks at a time;
  - The statements are (initially) not commented on or discussed;
  - If possible, all participants participate in the flash;
  - The moderators should also participate;
  - If you can't think of anything suitable at the moment, you can 'opt out' (e.g. "I don't want to comment now");
  - Everyone should express themselves in the first person if possible.
- Address the desired aspect with a question or statement.
- The members of the group (participants and teachers/moderators) express themselves in turn as spontaneously, concisely and precisely as possible.
- The statements are not discussed and not commented on.
- In the end, a conclusion for further work can (should) be drawn from the results of the flashlight. Unclear statements can now be questioned and possibly discussed.

| Didactic functions | Objectives |
|---|---|
| ■ Explore expectations/attitudes/desires/sensitivities<br>■ Making assessments/evaluations/moods/current sensitivities/impressions/perceptions visible<br>■ Addressing conflicts/disruptions<br>■ Clarify atmosphere/climate<br>■ Find out and clarify problems and open questions<br>■ Improve collaboration<br>■ Increase satisfaction<br>■ to prepare a decision<br>■ (Pre-) Determining knowledge<br>■ Have events evaluated | ■ Being able to formulate one's own opinion concisely<br>■ Be able to convey individual assessments/evaluations/current sensitivities/impressions/perceptions<br>■ Being able to listen<br>■ Know the opinion of other participants<br>■ Be able to assess the situation in a group appropriately<br>■ Be able to recognize and clarify conflicts and disturbances in the group<br>■ Be able to articulate criticism in a factual and personal way<br>■ Be able to give rule-based feedback |

**Uses**

- Before, during and at the end of work units or events
- To the interim balance or daily evaluation
- When group dynamic problems (conflicts/disturbances) occur
- To prepare for an important decision that must be supported by everyone

**Hints**

- Address only one aspect at a time.
- Encourage participants to express themselves, but not force them.

- The request "a sentence" or "a word" forces you to condense and concentrate the statements.
- A "wandering object" (e.g. a small ball) makes it easier to follow the rules.
- It is advantageous if the group sits or stands in a circle and the group members can look at each other.
- Lead the subsequent evaluation and record the consequences.
- Suggestions, wishes, etc. should be implemented in the further course.

## 3. Moderation

Moderation is a central function in project groups. (In addition, there are also other important functions such as "Visualize" and "Keep minutes" or "Obtain expertise"). In project groups, these functions should be alternated at least daily. All students should have the opportunity to practice these functions and receive feedback on them. Moderation is especially important if the group has more than 4 members.

### Procedure

1. Establish joint ability to work

- Think about it beforehand: possible TOPs, plus working techniques
- Initiation of various functional roles (protocol, assistance, time guard, etc.) and their assumption by other group members
- Keep an eye on discussion rules, if necessary work out and record common group rules with the group in an initial situation
- Establishing a common starting point
- Establish time management and transparency of scheduling for participants
- Building on previous meetings
- Suggest TOPs with
    - Order
    - Times
    - Priorities

and possibly amend them if objections or additions from the group

- To name the working technique on the topic in order to be able to subdivide and work on the topic

2. Moderate discussions in a structured and participatory manner

- Involve everyone and listen actively
- Bringing about decisions
- Make intermediate summaries (with the help of the visualization, ask for additions first, otherwise lead to the next bullet point)
- Make sure to comply with the rules and time
- Pausen initiieren

3. Guide working techniques

guide working techniques (e.g. brainstorming, multi-point question); if necessary, briefly introduce working techniques.

4. Visualize, control and present

- Record the consequences
  - Im Protokoll (ggf. Laptop)
  - In the work plan (flipchart)
- Controlling in the plenary session regarding responsibilities and status of processing

**Basic rules**

The attitude of the moderator:

- Be neutral, neither comment nor rate contributions from the group.
- support the group to work independently, to find the solutions to problems or goals themselves and to decide on suitable measures to solve the problem (à action plan).
- Be a method specialist and deliberately hold back in terms of content

### Materials

- Moderation Trunks
- All available media

### Special moderation methods

(http://www. Uni-Duesseldorf.de/muendlichkeit/Projekt-Netz/methodenrepertoire.htm, abridged, retrieved: 05.01.2016)

**Information poster / presentation scenario:** Posters with which the facilitator supports information input or small groups report on their work results.

**Shout-out question: Open** shouting of the keywords to the moderator. He writes down. The cards are sorted into clusters in a second pass. Time required: 10 - 20 minutes

**Card query:** Each group member writes **his keywords face down** on cards. Time required: 10 - 15 minutes. The moderator collects the cards, shuffles them and pins them on. The cards can be sorted into clusters as soon as they are interpreted. Time required: approx. 30 seconds per card

**Cluster poster:** An unsorted map wall is arranged into content blocks (clusters) on a second pinboard. Each block is given a heading.

**Topic Store:** Ordered list of cluster headings. Columns can be provided for weighting, timing, etc.

**Catalogue of measures / catalogue of activities:** Same as topic repositories, only with clear responsibilities, time indications, etc.

**Evaluation question** (or provocative thesis): On a scale, each group member rates with **one point**.

**Weighting question:** In a topic memory (list), each group member weights subtopics **with several points** (3 to 7 per person). Weighting can also be done anonymously. The vote is then cast via folded card to the moderator, who sticks the dots.

**Show the flag:** With 'flags' ([!] = I agree, [?] = don't know, have concerns, [flash] = I think is wrong) an opinion of the entire group is determined.

**Graffiti:** Scattered throughout the room are billboards with sentence beginnings, such as "It would be best if here ..." or "What I'm most concerned about is that ..."

**Four-field board:** The billboard is provided with a heading and divided into four fields. In each field, a thematic sub-aspect of the topic is dealt with, e.g. Is, should, solutions, resistances.

**Mind map:** The topic or question is written in the middle of a poster. The participants name 2 or 3 main aspects that the facilitator writes on thick branches. In any order, the participants name other main aspects or individual points and say to which branch another branch should be added. Afterwards, connected points can be clarified by arrows or lines. Time required: 15 - 25 minutes

## 4. Checklist for a project file

All documents of a project are systematically documented in a project file. The project file can also be used as a basis for grading project groups.

**The project file may contain:**

- List of group members, including contact details
- "Rules of the game" of the project group, if necessary distribution of work priorities/competencies/roles
- Target agreement (of the working group with the lecturer)
- Documentation of the kick-off meeting (e.g. template)
- Determination of periodically recurring meetings of the project group
- If necessary, determination of the communication channels (who? whom? when? how?)
- List of required materials
- Project Phase Plan and Milestone Plan
- Plan Changes
- Status
- Meeting minutes, including to-do lists
- Written documentation of the project
- Visualized parts of the presentation
- If necessary, peer review of another group