Assessment Criteria for Medical Engineering, Project Course

There are 7 criterias in the course description, below numbered in the same order, G1-G7. There are also 4 criterias for higher grades, H1-H4.

G1. Be able to participate in and conduct project groups

Excellent	Contribute to the progress of the project according to the handbook (only available in Swedish) or other agreed project management tool.. Keep time schedule, call for meetings, produce protocols and other documents. The work is performed independently and the produced documents keep high quality. Support the group members with your own knowledge.
Good	Certain guidance necessary for the project work to run smoothly.
Sufficient	Work and result completed on time, but with much guidance.
Insufficient	Lack of respect for agreements, severe lack of independence or disregard for supervision.

If the student contributes with a lot of work and even in that way improves the prototype/product but is not able to communicate his or her knowledge or describe what is done, the work in the group will not function. It will become a private work, which was not the purpose.

G2. Show analytic ability by dividing a problem into smaller sub problems

Excellent	Finds and divides into appropriate parts and defines function requirements and dependencies between these parts. Identifies drawbacks in the current approach and improves it.
Good	Understands the division in the design and understands the advantages and drawbacks but cannot find them by himself/herself.
Sufficient	Accepts to work with a small part of the project, but does not fully understand the meaning with it.
Insufficient	Lack of respect for the decided agreements. Rather works on his/her own total solution or larger part of the solution.

The group might have agreed on a division of the work. Either you have been a part of that solution or can at least understand it, that's *Excellent*. Thereafter the grade of understanding of the connection between the small parts is diminishing or the student does not want to work accordingly.

G3. Show ability to use relevant prerequisites to solve the task

It is assumed that certain knowledge should have been acquired and could be available to use.

Excellent	Can decide what knowledge is suitable and is able to use that to solve the task. Can also find several alternative solutions, depending on what previous knowledge is used.
Good	Can understand that different knowledge are required, but cannot define which.
Sufficient	Can solve the problem using knowledge or information pointed out by others.
Insufficient	Cannot understand why "these knowledge" should be used for this task.

G4. Show ability to independently search or ask for relevant information to solve the task

Excellent	Identifies needs for new knowledge in an appropriate manner, acquires quickly and uses efficiently
Good	Realizes after some time what knowledge or information is needed and acquires satisfactory
Sufficient	Waits too long to ask for information or becomes informed by the supervisor, but understands and uses what is presented.
Insufficient	Does not realize that new knowledge is needed. Unwilling or unable to acquire new knowledge.

G5. Orally present a technical product and discuss the work

Excellent	Shows good ability to orally present with clear arguments and analysis. Shows good ability to discuss the work.
Good	Shows good ability to present and discuss the work.
Sufficient	Shows ability to orally present the work.
Insufficient	Lacks the ability to orally present or discuss the work.

G6. Be able to produce a well disposed technical report with good linguistic and scientific quality

Excellent	Present a well disposed report, with clear accounts of the project and the results, a clear analysis and well founded argumentations well as good language usage, format and scientific accuracy.
Good	Present a well disposed report, with clear descriptions of the work and result, analysis and argumentation. A good language usage, format and scientific accuracy.
Sufficient	Present a written report with acceptable structure, format and language usage.
Insufficient	Lacks important elements in the written report, despite the request.

G7. Show ability to review your own and others work

To reach this aim for reviewing your own and others work, the following instructions are valid. During the project work the student should keep a diary and time report (optional). These should be available for the examiner to read. The interval depends on the length of the course. Notes should be taken every 15-20 hours or at least once a week. This is to minimize the risk that important information will be lost.
The diary should contain the following (not everything every time).

Project progress and project work

- Actual performed work
- Collaborative partner, who did I work with?
- What progress is done?
- What problems do I experience in the group?
- Have we solved any problems lately?

Analytical ability

- Why did I do this? How does it fit into the total project, the final prototype?
- What problems are unsolved?

Relevent knowledge, old (already acquired) and new (to be acquired)

- What knowledge have been used?
- What new knowledge have been acquired?
- How did I find them?

Reflection and assessment

- In what way have the other members contributed to success and failure?
- What do I know about the others work
- What are the possibilities to finish in time?
- What was the most stupid thing I did?
- What was the best thing I did?

These notes could also be discussed with the examiner during the project meetings, the mile stones (Uppföljningsmötena)

For higher grades the following criteria are also valid

- (H1) Can suggest several alternative solutions to a given problem and choose the best one from certain criteria
- (H2) Can make assumptions of performance or inaccuracy in the constructed prototype
- (H3) Can suggest improvements of the presented construction that could be implemented in a later version
- (H4) Has shown a large degree of independence

Note that silence is not always the same as independence. A relevant question followed by an interesting discussion can prove the analytic ability of the student.

At the end of the course before the final exam, each member of the group should carry out an assessment of the work in the group on an individual basis. It could look like this
Assess every member of the group including yourself with grade 1-5 (5 is the best)

- Contributes with a lot of knowledge and skills to the progress of the project
- Has a willingness and ability to contribute
- Uses pre-requisites in an excellent manner
- Makes good considerations and priorities and provides well founded proposals
- Quickly finds and acquires new knowledge and information

Self assessment has shown to be a useful tool for the examiner. He/she can from this material make judgements of the students ability to

- Assess his/her own work
- Assess others work

There is also material for assessing the other areas.

Final grade

All criteria are weighted for a holistic assessment. The following matrix could be used as a help. For simplicity the following translation is done

Excellent - 3
Good - 2
Sufficient - 1
Insufficient - 0

Higher grade criteria, H1-H4, are only assessed with 1 or 0.

<table>
<tr><th></th><th>G1</th><th>G2</th><th>G3</th><th>G4</th><th>G5</th><th>G6</th><th>G7</th><th>H1</th><th>H2</th><th>H3</th><th>H4</th></tr>
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<tr><td>E</td><td>1</td></tr>
<tr><td>Fx</td><td colspan="7">Total (G1:G5) > 5</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>F</td><td colspan="7">Total (G1:G5) < 6</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
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As can be seen, all combinations are not present. This is only a rough guide. One conclusion is that G1 is very important.