



## **Course PM Supplement BB200X**

### **Degree Project in Biotechnology, Second Cycle, 30.0 credits** **Examensarbete inom bioteknik, avancerad nivå, 30,0 hp**

#### **Degree project at second cycle**

In the degree project in biotechnology, the student should perform a project within biotechnology, where he/she will be trained in using analytical, technical and engineering skills and biotechnological techniques in a creative and inventive manner to solve a complex and challenging task within the area of biotechnology.

Students can perform degree project work either at KTH or at organizations other than KTH if the selected project is suitable for the course and relevant for the selected field of specialization. Projects performed within KTH require a main supervisor whereas projects carried out at organizations other than KTH require two supervisors, a main KTH-affiliated supervisor and an external supervisor (see External supervisor, below). The degree project course at second cycle is coordinated by two examiners, one is working in the AlbaNova University Center at the KTH main campus and the other is working in the Science for Life Laboratory in Solna. The present course framework aims to foster student access to academic and laboratory resources, student achievement of learning outcomes, and fair and just evaluation of student performance.

#### **Responsibilities of staff**

##### *Main supervisor*

The main supervisor is responsible for the student's access to sufficient resources for performing the degree project according to the project plan. He/She is responsible for supervising the practical and theoretical work and for monitoring the student's learning process. The main supervisor evaluates student achievements towards the course learning outcomes, and provides documentation for individual evaluation at half-time and at the end of the project work. The main supervisor participates in the meetings with the student and examiner according to the student course plan (appendix 1), including the startup meeting and the final oral presentation.

Projects to be carried out at organizations other than KTH require two supervisors, (1) a KTH-affiliated main supervisor and (2) an external supervisor (see External supervisor).

The main supervisor must be a senior scientist with a PhD degree, affiliated at KTH, with expert knowledge in the area of the degree project. He/She is formally appointed by the examiner.

##### *Co-supervisor*

If required, a co-supervisor can be appointed by the main supervisor. The main supervisor can delegate specific supervision tasks to the co-supervisor but not his/her responsibilities as main supervisor.

The co-supervisor may be a PhD-student. The PhD-student who participates in supervisions should have passed the Supervision methodology course (BB3120) or equivalent.

#### *External supervisor*

If the project is performed at organizations other than KTH, an external supervisor has to be appointed besides the main supervisor. He/She is responsible for the student access to sufficient resources for theoretical and practical work to perform the degree project according to the project plan. He/She is required to provide documentation and observations for individual evaluation of the student. The external supervisor should have expert knowledge in the area of the degree project.

#### *Examiner*

The main responsibility of the examiner is registration, evaluation and grading of the student's degree project (for details see Appendix 2). He/She will also report statistics regarding the degree project work to Grundutbildningsansvarig (GA) and further develop the course based on course evaluation and analysis.

The examiner verifies that the student qualifies for the course, that the selected project is suitable as a degree project in biotechnology at the second cycle and that the project requirements are met in the course syllabus. The examiner approves the project synopsis and informs registered students and their supervisors about the course goals and the course plan during the start-up meeting. The examiner evaluates student progress towards the learning goals by assessment of the project plan, progress at half-time, the oral presentation, the opposition, and the thesis (see Appendix 2).

The examiner oversees that all arrangements for the start-up meeting, the half-time assessment, the oral presentation and the opposition tasks are done. The examiner is responsible that evaluation of the student is performed according to the grading criteria and that all intended learning outcomes are assessed. The examiner sets the formal grade (P/F) based on the documentation provided by the supervisor and assessment of the project plan, the thesis, the oral presentation and the critical assessment of another student's work (the opposition).

The examiner is required to have a teacher position (assistant professor, associate professor, professor) at the School of Biotechnology at KTH and is also the course coordinator. The examiner and the main supervisor shall not be the same person. Assessment of the student's working process may be delegated to an assistant examiner (see Assistant examiner), if needed.

#### *Assistant examiner*

The main responsibility of the assistant examiner is to support the examiner if knowledge in the specific area is required. The examiner can delegate specific tasks to the assistant examiner, or all responsibilities of the main examiner.

The assistant examiner should have an affiliation at the School of Biotechnology at KTH and hold a PhD or equivalent and must not belong to the same research group as the examiner or the supervisor (same Division is accepted).

### *Course administrator*

The responsibility of the course administrator is to support the examiner in administration of the course. The course administrator will book meeting rooms/teaching halls for the course according to the schedule, register the students for the course, report the grades, file the Master theses and publish them in KTH databases.

## **Course syllabus and documentation**

### *Appendix 1. Student course plan*

This is the framework for the course including time outline, activities and responsibilities of the student.

### *Appendix 2. Examiner and supervisor course plan*

This is the framework for the course including time outline, activities and responsibilities of the examiner and main supervisor, and of the external supervisors, co-supervisors, and assistant examiners, when applicable.

### *Appendix 3. Project synopsis*

Purpose:

1. Assuring that the scope of the project can be defined as biotechnology.
2. Assuring that the project is realistic and allows the student to reach the intended learning outcomes (see Course PM).

The project synopsis is written by the student and should be handed in to the course examiners together with the course application form and a recent LADOK extract. The project synopsis is accepted if the two objectives above are fulfilled.

### *Appendix 4. Project plan*

Purpose:

1. The plan is to be applied by the student as a tool for structure, time management and evaluation during the course of the project.
2. It should help the student in obtaining progression in the skills of project management.
3. It should assure fulfillment and archiving of the learning outcomes, especially concerning societal benefit, sustainability, environment and ethics.

The project plan is written by the student and is accepted if the project plan requirements shown in Appendix 4 are fulfilled. Feedback on the project plan is given to the student by the main supervisor and the examiner.

### *Appendix 5. Half-time meeting*

Purposes of the half-time meeting (in week 10):

1. Making sure that the student is on track according to the project plan.
2. Enabling redirection of the project or solutions to obstacles.
3. Enhancing the interactive process between supervisor and student.
4. Giving feedback and encouragement to student

At the half-time meeting the form "Evaluation report 1" is filled in by the main supervisor and handed in to the examiner.

#### *Appendix 6. Evaluation report 1*

Purposes of the first evaluation (at half-time meeting in week 10):

1. Giving feedback and encouragement to student.
2. Enabling just and fair grading, including consideration of progress and process.
3. Enabling the examiner to validate the process and progression of the student's skills

The form "Evaluation report 1" is filled in by the main supervisor and handed in to the examiner after the half-time meeting.

#### *Appendix 7. Evaluation report 2*

Purposes of evaluation report 2:

1. Ensuring just and fair grading of the student's learning outcomes.
2. Establishing that the student has reached the learning outcomes of the course.

The form "Evaluation report 2" is filled in by the main supervisor and handed in to the examiner in project week 21.

#### *Appendix 8. Course evaluation*

The goal of this evaluation is to get information from students in order to improve the course in the future. Please note that we want to hear students' opinion primarily about the course format, not about the actual project and supervision. At the end of this form there is an open question where students can relate their opinions also about the project and supervision.

The course evaluation form is handed in to examiner in project week 21.

#### *Appendix 9. Grading template*

## Appendix 1. Student course plan

Deadline	Activity	Responsible	Action	Document
>5 weeks before semester start	Select a project and a main supervisor	Student	The student searches for a relevant biotechnology R&D project for the degree project at second cycle, at KTH or at other organizations or companies, and approaches a main supervisor located at KTH.	
3 weeks before semester start	Prepare project synopsis and course application	Student	The student defines a suitable and relevant project for the degree project at second cycle in the selected field of specialization. The main supervisor and the course examiner provide guidance and support to the student during the project formulation phase, if needed. In the case of confidentiality issues with the project, this must be discussed with the examiner.	Project synopsis (Appendix 3)
3 weeks (excluding holidays) before semester start	Submit Application	Student	The student hands in a formal course application to the examiner including the application form "PART 1" signed by the school administration, the project synopsis and a recent LADOK extract with accomplished courses.	Application
1 week before semester start	Invitation to start-up meeting	Examiner	The course coordinator/examiner sends out an invitation to the start-up meeting (including date, time and location).	Application
Semester start	Course registration	Examiner & Administrator	The administrator does the course registration when the application has been approved by both the course examiner and the Director of Undergraduate and Masters' studies (GA).	Registration
Semester start	Start-up meeting	Examiner	Students attend a start-up meeting regarding course requirements and format before the initiation of the degree project work. Students who do the degree projects abroad attend the start-up meeting online, together with their external supervisor if possible.	Course PM
Week 3	Project plan	Student	The student submits a first version of the project plan including Objectives, Background, WBS, Milestones, Timeplan and MoSCoW specified tasks to the course examiner.	Project plan (Appendix 4)
Week 10	Final project plan	Student	The student submits a final project plan to the course examiner by adding Stakeholder analysis, Business case, SWOT analysis, Risk evaluation assessment and Summary to the first version of the project plan.	Project plan (Appendix 4)
Week 10	Half-time meeting	Student & main supervisor	Progress towards the learning outcomes and project plan is assessed during the half-time assessment meeting. Participants: Student, main supervisor and examiner. (For students who does the degree project abroad, the half-time meeting will be organized on-line)	Half-time meeting (Appendix 5) Evaluation report 1 (Appendix 6)
Week 15	Program for oral presentations	Examiner	Program posted on the course web regarding oral presentations and opposition assignments.	Program for oral presentations
Week 19	Master's thesis completed	Student & main supervisor	The student hands in the master's thesis to the main supervisor, the course examiner and the student opponent. If revisions have been made to the project plan since the half-time meeting, the final revised version should be submitted to the examiner.	Master thesis Revised final project plan

Week 19	Submission of opposition report	Student	The student hands in the opposition report to the examiner, at latest two days before the Oral presentation.	Opposition report
Week 20	Oral Presentation and opposition	Student & student opponent	Students present their thesis work and participate in the opposition session. Participants: Student, main supervisor, course examiner, student opponent, and co-examiner if required.	Presentation
Week 21	Course evaluation	Student	Students fill in course evaluation form.	Course evaluation form
Week 23	Final grading	Examiner	The final grading is performed.	Grade

## Appendix 2. Examiner and supervisor course plan

Deadline	Activity	Responsible	Action	Document
3-1 weeks before semester start	Registration	Examiner	The course examiner and the main supervisor provide guidance to students during project formulation phase. The student is registered to the course by the examiner, when the application, the selected project and the project synopsis are approved (by both the examiner and the director of undergraduate studies (GA)). Exceptions: 1. If the application or the project is insufficient, the application has to be revised within a week and a new formal application shall be submitted. 2. If eligibility for the degree project is not fulfilled the application is rejected.	Application
1 week before semester start	Invitation to start-up meeting	Examiner	The course coordinator/examiner sends out an invitation to the start-up meeting (including date, time and location).	Application
Semester start	Course registration	Administrator	The administrator does the course registration when the application is approved by both the course coordinator/examiner and the Director of Undergraduate and Masters' studies (GA).	Registration
Semester start	Submit Application	Examiner	The start-up meeting gathers all students planning to initiate their degree project work. During the start-up meeting the course examiner introduces the learning outcomes and course requirements and provides specifications on project documentation, final oral presentation and deadlines. Participants: all students, main supervisors, co-supervisors and the examiner.	Course PM
Week 5	Feed-back	Examiner & main supervisor	The examiner and the main supervisor provide feed-back to the project plan.	Project plan (Appendix 4)
Week 10	Half-time meeting	Examiner & main supervisor	The examiner ensures that all students have been assessed through a half-time assessment meeting. The main supervisor writes "Evaluation report 1" and hands it in to the examiner.	Half-time meeting (Appendix 5) Evaluation report 1 (Appendix 6)
Week 15	Program for oral presentations	Examiner	Program posted on the student's web regarding oral presentations and opposition assignments. Notify presenting students, examiners and main supervisors.	Program for oral presentations
Week 20	Oral presentation and opposition	Student & student opponent	Degree project presentations. Participants: Student, main supervisor, external supervisor (if possible), examiner, student opponent, and co-examiner if required.	Presentation
Week 21	Student evaluation 2	Main supervisor	The main supervisor evaluates student achievements, master's thesis, project plan, opposition and oral presentation and hands in "Evaluation report 2" to the examiner.	Evaluation report 2 (Appendix 7)
Week 23	Final grading	Examiner	The examiner grades the student's work based on the evaluation documentation provided by the main supervisor and the master's thesis. Examiner communicates the grade to the student.	Grade
Week 23	Archiving and web publication of master's thesis	Administrator	The administrator reports the result in Ladok. Publication in DiVa and KTH Social is done, if allowed by the student.	
Twice per year	Follow up	Examiner	Perform course analysis and report statistics regarding the degree project course to GA.	

### **Appendix 3. Project synopsis**

The **project synopsis** is written by the student and should be submitted together with the **approved (signed) application form "PART 1"**, and **a copy of your LADOK registered transcripts**, to the examiner for registration to the course.

The project synopsis might be approximately 1/2-1 pages and should contain:

1. A project title.
2. A draft project description including the scientific question, the intended methods and resources, and the expected outcome.
3. Information about where the project is going to be carried out, the contact information of your main supervisor, and the contact information of your external supervisor if the project work is going to be performed at organizations other than KTH.
4. In the case of confidentiality issues with the project: a detailed description of these issues.

For documentation, the project synopsis should be submitted in paper format as an appendix to the course application. The project synopsis should also be sent to the examiners by email.



## Appendix 4. Project plan

The project plan is designed and continuously updated by the student to facilitate the project work. The project plan should be handed in twice during the project, at week 3 and prior to the half-time assessment at week 10. In the case of revisions after week 10, a final revised version should be handed in at week 19. The following parts should be included in the project plan:

- Objectives<sup>1</sup> (should be measurable).
- Background:<sup>1</sup> A short scientific description of the subject area and the selected topic, including prerequisites and a working hypothesis, with 3-5 relevant references from trusted sources.
- WBS (Work Breakdown Structure)<sup>1</sup> for activities and tasks.
- Milestones<sup>1</sup> consisting of deliverables and partial aims relating to the measurable objectives.
- Timeplan<sup>1</sup> consisting of a gantt schedule with activities, milestones, and deadlines (with course requirements, administration, supervision, e.t.c.). In case of scrum, the time plan is approximate and the activities are split into two weeks laps. Partial aims replace most of the deadlines.
- Specification<sup>1</sup> of project related tasks prioritized according to MoSCoW (Must, Should, Could and Won't). In case of scrum, activities and partial aims are prioritized.
- Stakeholder analysis<sup>2</sup> describing the primary and secondary stakeholders and their interests (goals).
- Business case<sup>2</sup> describing societal, financial, ethical and environmental aspects related to the project and the stakeholders that justify execution of the project.
- SWOT<sup>2</sup> analysis of Strengths, Weaknesses, Opportunities and Threats.
- Risk evaluation assessment<sup>2</sup> after SWOT. Do not forget ethical aspects.
- Summary<sup>2</sup>

<sup>1</sup> Shall be included in the first version of the project plan submitted in week 2.

<sup>2</sup> Shall be added to the final project plan submitted before the halftime assessment at week 10.

The project plan requirements should be adapted to the student's prior education in project management. For students enrolled HT14 and later, a professional project plan should be handed in. Students enrolled earlier should contact the examiner regarding the project plan. The final project plan should normally be 4-6 pages.

## **Appendix 5. Half-time meeting**

The half-time meeting for each registered student is scheduled in project week 10. At the meeting, the student and the main supervisor, co-supervisor and the examiner should participate. The examiner chairs the meeting and the main supervisor provides Evaluation report 1 (Appendix 6). In Evaluation report 1, Part A is filled in by the main supervisor before the meeting, while part B is filled in during the meeting. During the meeting, each point of the document is discussed. After the meeting, the report is sent to the examiner.

The half-time meeting report should briefly document:

1. The student's description of his/her compliance with the project plan.
2. The student's formulation of problems encountered that need to be overcome.
3. Actions planned and proposed by the student in agreement with the main supervisor.
4. Description of subsequent project related tasks.
5. Constructive feedback from the main supervisor to the student.
6. If required, meta-communication on cooperation between the main supervisor and the student.

## Appendix 6. Evaluation report 1

Evaluation report 1 aims to evaluate student performance and project progress at half-time (project week 10). In Evaluation report 1, Part A is filled in by the main supervisor before the half-time meeting and is presented during the meeting. Part B is filled in during the meeting and should be based on the meeting discussions. After the meeting, the report should be sent to the examiner.

### Part A. To be filled in prior to the half-time meeting

#### 1. Student activities and performance

Evaluate the student activities and performance by underlining one of the options in Table 1.

**Table 1.** Evaluation of the student's activities and general project performance.

Student activities	Student performance		
1. Independence regarding project planning.	Poor	Good	Very good
2. Independence regarding practical work.	Poor	Good	Very good
3. Independence regarding the analysis of results.	Poor	Good	Very good
4. Report writing performance.	Poor	Good	Very good
5. Progress according to project plan.	Poor	Good	Very good

#### 2. General comments regarding the student's performance at half-time:

#### 3. Project progress

Evaluate the project progress by commenting on delivery and delay of milestones. In case the project has problems, which affects the progress of the project, describe the problem and suggest possible solutions:

#### 4. Estimate supervision

Estimate the amount of supervision during the project work.

- Number of meetings between student and supervisor:
- Average time for each meeting:
- Suggestions for changes in supervision:

**Part B. To be filled in during the half-time meeting**

**1. Date for half-time meeting:**

**2. Meeting participants:**

Student (name and civic number): \_\_\_\_\_

Main supervisor (KTH):

Co-supervisor:

External supervisor:

Examiner:

**3. Meeting form:**              Regular              Video/phone              Other:

**4. Proposed activities and actions to improve the student performance and project progress:**

**Signature main supervisor:**

**Signature examiner:**

To be sent to the examiner at the end of project week 10.

## **Appendix 7. Evaluation report 2**

Evaluation report 2 aims to evaluate student performance for final grading. The report should be filled in by the main supervisor during project week 21. In part A, the general information regarding the degree project is filled in. In part B, the supervisor grades the student based on all course goals. The report should be sent to the student's examiner.

### **Part A. General information regarding the degree project**

#### **Student (name and civic number):**

Main supervisor (KTH):

Main supervisor signature

Co-supervisor:

External supervisor:

Examiner:

#### **The project was performed at:**

Internal unit at KTH:

External university:

Company:

Abroad:

#### **Title of degree project:**

**The student participated in the compulsory meetings; the start-up meeting, the half-time meeting and the presentation/opposition seminar:**

☐ yes / ☐ no (if no, add reason):

**A project plan was handed in on time (date):**

**The project was orally presented on time (date):**

**The master's thesis was handed in on time (date):**

**Plagiarism check, ☐ yes / ☐ no (if yes, add date):**

*Part B on page 2.*

## Part B. Grading

### Assessment Criteria

All assessment criteria below should be graded Pass (P) or Fail (F). All eight criteria of assessment below should be marked with a passing grade in order for the final grade to be awarded. Learning outcomes and complementary information connected to how the grading should be performed can be found at:

<https://www.kth.se/en/student/program/examensarbete/exjobb-1.311682>

	Learning outcome	Grade (P/F)	Comment
1)	Demonstrate knowledge of the scientific grounds of the chosen subject area, as well as in-depth insight into current research and development and in-depth knowledge of relevant methodology.		
2)	Demonstrate the ability to search for, gather and integrate knowledge and identify their need for additional knowledge, all with a holistic, critical and systematic approach.		
3)	Demonstrate the ability to identify, analyse, assess and handle complex phenomena, questions and situations, even with limited information.		
4)	Demonstrate the ability to plan and, with adequate methods, carry out skilled tasks within a given time frame and evaluate this work.		
5)	Demonstrate the ability to develop and evaluate products, processes, systems, methods or technical solutions with respect to people's circumstances and needs, as well as society's goals in terms of economically, socially and ecologically sustainable development.		
6)	Demonstrate the capacity, both orally and in writing, in dialogue with different groups, to clearly account for and discuss their conclusions and the knowledge and arguments on which these are based.		
7)	Demonstrate the ability to make assessments with regard to relevant scientific, social and ethical aspects.		
8)	Demonstrate the skills required to participate in research and development work or to independently work in other skilled activities.		

## Appendix 8. Course evaluation

### Course evaluation BB200X

The goal of this evaluation is to get information from you in order to improve the course in the future. Please note that we want to hear your opinion primarily about the course format, not about the actual project and supervision. At the end of this form there is an open question where you can relate your opinions also about the project and supervision.

It is OK to skip questions if you can't/don't want to answer!

1. To what extent do you think you have achieved the stated course goals?

Very large	Large	Fair	Small	Very small
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments:

2. How many working hours per week have you spent on the course and your project?

<35	35-37	38-42	43-45	>45
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments:

3. To what extent do you feel that you understood how the course was organized and what you were expected to do.

Very large	Large	Fair	Small	Very small
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments:

4. What do you think about the general format of the course, with start-up meeting, half time meeting and oral presentation/opposition? Was this a good format? Could it have been performed in a better way?

Comments:

5. Do you have any comments about the project plan?

Comments:

6. What were the strengths of the course?

Comments:

7. What were the weaknesses of the course?

Comments:

8. Do you have any suggestions for how to improve the course?

Comments:

9. How was the overall quality of the course?

Very good	Good	Acceptable	Poor	Very poor
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments:

10. Other comments, regarding your project and supervision?

**Thanks a lot for your help!**



## Appendix 9. Grading template



**Course code:**

**Degree Project 30 hp**

### General information

Name of student:

Civic registration number of student:

Examiner:

Supervisor:

Place where the project took place:

Start date:

Completion date:

Title in Swedish:

Title in English:

I approve immediate registration in DiVA (Yes/No):

Registration in DiVA should be delayed until (give a later date, max 6 months away):

I approve publication of my Summary in DiVA (Yes/No):

I approve publication of my full-text thesis in DiVA (Yes/No):

Five key-words (in Swedish):

Five key-words (in English):

Topic (see <https://bibliometriforum.files.wordpress.com/2011/01/standard-fc3b6r-svensk-indelning-av-forskningsc3a4mne.pdf>):

Trita-number (the examiner contacts [gruadmin@cbh.kth.se](mailto:gruadmin@cbh.kth.se) to get the number):

Summary in Swedish:

Summary in English:

The examiner has double checked the title in both English and Swedish before it is reported in LADOK.

Language and spelling: ☐ No remarks

The thesis has been checked for plagiarism. Date:

Results: ☐ No remarks

☐ Reported to the disciplinary board

Signature of Examiner:

Printed name:

### Assessment Criteria

All assessment criteria below should be graded Pass (P) or Fail (F). All eight criteria of assessment below should be marked with a passing grade in order for the final grade to be awarded. Learning outcomes and complementary information connected to how the grading should be performed can be found at:

<https://www.kth.se/en/student/program/examensarbete/exjobb-1.311682>

	Learning outcome	Grade (P/F)	Comment
1)	Demonstrate knowledge of the scientific grounds of the chosen subject area, as well as in-depth insight into current research and development and in-depth knowledge of relevant methodology.		
2)	Demonstrate the ability to search for, gather and integrate knowledge and identify their need for additional knowledge, all with a holistic, critical and systematic approach.		

3)	Demonstrate the ability to identify, analyse, assess and handle complex phenomena, questions and situations, even with limited information.		
4)	Demonstrate the ability to plan and, with adequate methods, carry out skilled tasks within a given time frame and evaluate this work.		
5)	Demonstrate the ability to develop and evaluate products, processes, systems, methods or technical solutions with respect to people's circumstances and needs, as well as society's goals in terms of economically, socially and ecologically sustainable development.		
6)	Demonstrate the capacity, both orally and in writing, in dialogue with different groups, to clearly account for and discuss their conclusions and the knowledge and arguments on which these are based.		
7)	Demonstrate the ability to make assessments with regard to relevant scientific, social and ethical aspects.		
8)	Demonstrate the skills required to participate in research and development work or to independently work in other skilled activities.		

**Final Grade (P/F):**

Date of approval:

Examiners signature:

Printed name:

I have been informed about the assessment and the final grade:

Students signature:

Printed name:

*Filled out form is sent in doc(x) format, as well signed pdf to the students' office  
studentexpedition@biotech.kth.se for registration in LADOK.*