

الجامعة الألمانية الأردنية
German Jordanian University



SCHOOL OF APPLIED MEDICAL SCIENCES

DEPARTMENT OF BIOMEDICAL ENGINEERING

GRADUATION PROJECT HANDBOOK

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Introduction

Graduation project is a partial requirement for the fulfillment of the BSc. degree in Biomedical Engineering at School of Applied Medical Sciences. It is carried out through two main courses Graduation Project I and Graduation Project II. Graduation project provides students the opportunity to implement a feasible solution in a real world solution or to demonstrate individual initiative or group responsibility to use resource materials to express ideas and talents.

This handbook provides information about the graduation project's process, evaluation criteria, deliverables, documentation template, and required forms.

Graduation Project Process and Supervision

Graduation project can be conducted as an individual project or team project under the supervision of BME department member or a faculty member from other schools at GJU. Also, it is possible to carry out your project during the exchange year in Germany.

a) Projects in Department of Biomedical Engineering

Projects in this category includes the projects that under the supervision of the BME department members only. Graduation project process is summarized in the following steps:

- 1- Meet** the academic staff whom you wish to work with in order to agree on a project topic.
- 2-** Each group should submit Graduation Project Department approval form (**Appendix A**) to the department **two weeks** before the add and drop period.
- 3-** After approving the project topic by the department, **students should immediately start working on the project and the documentation.**

At the first meeting, the supervisor should determine the duration between the subsequent meetings. The students should continuously keep their supervisor up to date with their progress and the obstacles that they face.

During the semester, the students should regularly meet with their supervisor to discuss both, the completed and the upcoming tasks. At each meeting, the students are encouraged to complete a discussion minutes form that documents the meeting agreements and to submit a progress report that shows the completed and the upcoming tasks. It is highly recommended to use the suggested weekly report in (**Appendix B**).

The student is required to complete the project and to submit its deliverables to the supervisor at least one week before the defense day which will be at the last teaching day in the semester of graduation project II course. The exact dates for submitting the deliverables will be announced at the beginning of each semester.

b) Joint Projects in GJU

Joint projects in GJU include projects conducted as collaboration between different departments in GJU. The team of joint projects includes a student from the department of Biomedical Engineering and a student from another department in GJU. The joint projects are conducted under the supervision of two academic members; one from each department. In case of undertaking a joint project, departments approval (**Appendix A**) is required prior to start working on your project.

Joint project process is summarized in the following steps:

- 1- Form your team (agree on a topic with a student of another department).
- 2- **Meet** the academic staff in the department of Biomedical Engineering whom you wish to work with in order to agree on a project topic.
- 3- Discuss your project with the academic staff in the other department.
- 4- Submit Graduation Project Department approval form (**Appendix A**) to the department.
- 5- After approving the project topic by the department, **students should immediately start working on the project and the documentation.**

During the semester, the students should regularly meet with their supervisor to discuss both, the completed and the upcoming tasks. At each meeting, the students are encouraged to complete a discussion minutes form that documents the meeting agreements and to submit a progress

report that shows the completed and the upcoming tasks. It is highly recommended to use the suggested weekly report in (**Appendix B**).

The student is required to complete the project and to submit its deliverables to the supervisor at least one week before the defense day which will be at the last teaching day in the semester of graduation project II course. The exact dates for submitting the deliverables will be announced at the beginning of each semester.

c) Projects in Germany

It is possible to conduct your graduation project during your exchange year in Germany in any recognized medical equipment company or academic institution. However, you need a department approval before starting your project (**Appendix C**).

The university general requirements for graduation projects conducted in Germany are applicable (**Appendix D**). Also, students should be aware of department requirements that include:

- 1- You need to submit the approval from (**Appendix C**).
- 2- You are required to ask your advisor in Germany to fill and send the evaluation form (**Appendix E**) stamped and signed to the graduation project coordinator.
- 3- You need to keep your advisor (in the Biomedical Engineering department-GJU) updated with the progress of your project.
- 4- You should submit all the required deliverable as mentioned in Graduation Project Deliverables in the next section. You need to notify your advisor for any failure to meet the deadline due to the project timeline.

Graduation Project Deliverables

Graduation project deliverables are the proposal, graduation project interim report, graduation project final report, graduation project poster and graduation project defense. In this section the deadline and requirements for each deliverable is discussed. The proposal and interim report

should be submitted in Graduation Project I semester. On other hand, the final report and the poster should be in Graduation Project II semester.

Deliverable 1: Proposal

**Deadline: Graduation Project I Semester
Week 10**

The proposal is a plan of action and justification for research of your interest. The aim of the proposal is to get the approval of your thesis or to receive a fund for your project. The proposal should be not more than two A4 pages written in Times New Roman, 12 point font, with one and a half line spacing, and at least one inch margins. The structure of the proposal is:

- 1- Title
- 2- Abstract
- 3- Introduction/ Background
- 4- Statement of the Problem
- 5- Purpose/Aims/ Rationale
- 6- Review of Literature
- 7- Methodology
- 8- Significance/ Implications
- 9- Bibliography

Submission: Students should submit a soft copy to their supervisor and the coordinator.

Deliverable 2: Interim Report

**Deadline: Graduation Project I Semester
Week 14**

Students should submit one hard copy for their supervisor in week 15 in the semester of **Graduation Project I**. The interim report should be written in Times New Roman, 12 point font, with one and a half line spacing, and at least one inch margins. The interim report should be arranged in the following sequence:

1. **Title page:** there are two forms for the title page; one for projects inside BME department (**Appendix C**) and one for joint projects (**Appendix D**). Make sure to use the correct one for your project.
2. **Abstract** (not more than 200 words): A very brief summary of your work. Starting

with background, leading to aims, then methods, results, and main conclusions. The title of the project and your name as it appears on your official university transcript must be on the first page of the abstract in addition to the degree. If you did not get results until the submission of your interim report, you can write a summery instead of the abstract in your interim report and then include the abstract in the final report.

3. **Table of contents:** simple contents of the report giving section titles and page numbers. It is highly recommended to use MS Word/ References/Table of contents function for this.
4. **List of Symbols:** an optional section which is a simple table of symbols or abbreviations and their meaning.
5. **List of Tables:** an optional section which is a simple list of tables included in your report.
6. **List of Figures:** an optional section which is a simple list of tables included in your report.
7. **Body of report:** the structure of the body is arranged as :
 - a. **Chapter 1: Introduction** which is in total of 2-3 pages. It is divided into three main sections: Background (1-2 pages); Aims and objectives ($\frac{3}{4}$ page); Outlines ($\frac{1}{4}$ - $\frac{1}{2}$ page).
 - b. **Chapter 2:** Literature review and Theoretical Background (10-15 pages). This chapter should not exceed 30% of the project
 - c. **Chapter 3:** Methodology where you show how you will do the work.
8. **References:** you are highly recommended to use **Harvard style**. We do advice to use MS Word/ References/Insert Citation function for this.
9. **Appendices:** you may have as many appendices as you wish in which you put other material you think is relevant but could not fit, or did not want to fit, into the main report.

Deliverable 3: Final Report

Graduation Project II Semester Week 14

Students should submit **three hard copies and one soft copy of the project's final report** to the supervisor. Student should submit two copies to the graduation projects coordinator and the third copy should be submitted after doing the corrections (after the examiners feedback).The

softcopy should be submitted by email or on CD to the supervisor and the graduation projects coordinator. The supervisor will retain one hard copy and submit the other to the department. You are required to complete your project and submit its deliverable to your supervisor at least two weeks before the defense day. The exact date will be announced by the department.

The final report is a modified interim report. The structure and format of the report is standard and **must be** followed. Your report should be arranged in the following sequence:

1. **Title page: (Appendix F).** Make sure to use the correct one for your project.
2. **Signature page (Appendix G).**
3. **Declaration (Appendix H):** the declaration is used to say that the work of the project is yours.
4. **Abstract:** the same instructions as in the interim report.
5. **Table of contents:** simple contents of the report giving section titles and page numbers. It is highly recommended to use MS Word/ References/Table of contents function for this.
6. **List of Symbols:** an optional section which is a simple table of symbols or abbreviations and their meaning.
7. **List of Tables**
8. **List of Figures.**
9. **Acknowledgements:** You may wish to include some acknowledgements in your report for people involved with the project or people who have helped you through your degree such as family members and friends.
10. **Body of report:** the structure of the body is arranged as :
 - a. **Chapter 1-Chapter 3:** Modified from the interim report (P.g:8)
 - b. **Chapter 4:** Results

- c. **Chapter 5:** Discussion: Explanation of the results including a comparison to published work.
 - d. **Chapter 6:**Conclusions and Future Work (2 pages; one page for each)
11. **References:** you are highly recommended to use **Harvard style**. We do advice to use MS Word/ References/Insert Citation function for this.
 12. **Appendices:** you may have as many appendices as you wish in which you put other material you think is relevant but could not fit, or did not want to fit, into the main report.
 13. **Computer CD:** you may submit a CD or DVD with your report by placing it in a CD folder glued to the inside of the last page.

Deliverable 4: Graduation Project Poster

**Graduation Project II Semester
Week 14**

The student should prepare a poster representing their graduation project (**A1 size**). The poster is a visual communication method and should therefore look interesting, be easy to follow and achieve the task of communicating the information to the viewer. The poster should be understandable by somebody reading the poster when the presenter is not there and should have some background information, aims and objectives, methods, results, conclusion, and future work.

Deliverable 5: Graduation Project Defense

**Graduation Project II semester
Week 15-16**

All the graduation projects' defenses will be scheduled in the last day of each semester. A complete schedule for all the defenses will be announced earlier. The schedule shows each student's defense time, location, and examiners.

Note: Student will have **NO MORE** than 30 minutes to present their project to the examiners.

Graduation Project Evaluation

During the project's defense, the supervisor and the examiners are going to investigate the project's deliverables with the team. Then, they are going to complete the evaluation forms (**Appendix I**). These forms evaluate the students in two perspectives; team based and individual based. Finally, a final evaluation form is submitted to the department. For each student, the supervisor has 40% of the project's final grade and the examiners have the rest 60%. The examiner (internal or external) will be a faculty member who has expertise, experience or background with the project topic.

Please refer to the supervisor and the examiners evaluation sheets (**Appendix I**) to check the evaluation criteria that will be used to evaluate the group and each individual student as well.

Academic Integrity/Plagiarism

The students should be aware that all work completed and submitted for their graduation project must be their work. Also, they must show it clearly and in the best way. Students who purchased and/or copied any portion of their project may lead to graduation project failure.

The projects report should be correctly and accurately structured and referenced. Any information or work that is not students own work should be correctly and accurately cited and acknowledged **after paraphrasing**.

A: Graduation Project Approval Form



الجامعة الألمانية الأردنية
German Jordanian University

**School of Applied Medical Sciences
Department of Biomedical Engineering
Graduation Project Approval**

Date:

Student(s) Name:..... **I.D :**.....

..... **I.D :**.....

Suggested Project Title:.....

Supervisor.....

Project Summary:

.....
.....
.....

Signatures:

Supervisor | **Co-Supervisor (for Joint Project)- School:**

Do you agree on supervising this project?

YES NO

Signature

Do you agree on supervising this project?

YES NO

Signature

Projects Coordinators | **Head of the Department**

Comments

Comments

Signature

Signature

B: Weekly Report Form

Weekly Report –Week 6

Project Title:

Date:

Supervisor :

Student :

No.	Week Goals	Done	
		Yes	No
1			
2			
3			

For any un achieved goal(s), Please specify:

1- Why??

2- Who??? (a person may help in achieving the goals)

3- How?? (Recourses & methods to solve the problem)

C: Graduation Project Approval Form- PROGECTS IN GERMANY



الجامعة الألمانية الأردنية
German Jordanian University

**School of Applied Medical Sciences
Department of Biomedical Engineering
Graduation Project Approval-Projects in Germany**

Date:

Student(s) Name:..... I.D :.....

This form for: Graduation Project I Graduation Project II

Suggested Project Title:.....

Project Period: From..... To:.....

Project Scope:

.....
.....
.....
.....

**Attach any important documents (i.e: Company approval)

Student Signature:

GJU Advisor

Advisor in Germany

Name:

Name:

Do you agree on supervising this project?

Affiliation:

YES NO

Email:

Signature

Tel:

Address:

Projects Coordinators

Head of the Department

Comments

Comments

Signature

Signature

D: General Regulations for Projects in Germany

Many students of the German Jordanian University (GJU) are offered the opportunity to perform a bachelor graduation project at a company/university in Germany. This document describes the general requirements for all GJU departments for such cases.

- 1) The student must submit a written request to the department stating his/her interest in conducting their graduation project in Germany and specifying the title and scope of the project. The department should assign an advisor to follow up with the student.
- 2) A project proposal must be submitted to the advisor at GJU 2-4 weeks before the “Add and Drop” period of the semester, in which the student plans to perform the project. The proposal must include measurable objectives of the work to be done at the company/university.
- 3) The project must have a project advisor at the company/university in Germany, whose contact information must be included in the proposal.
- 4) Based on the recommendation of the GJU advisor, the department and the school may approve the student’s graduation project in Germany. Upon approval, the school would then send the decision to the registration department to allow the student to register for the graduation project for that semester (even if the minimum numbers of credit hours are not registered for the respective term) and pay the tuition fees to GJU
- 5) The student must complete the twenty (20) weeks of regular industrial training before starting the graduation project. An official letter from the company/university is required stating the start and end date of the training in case the graduation project is undertaken in the same company/university as the internship.
- 6) The graduation project duration must span a minimum of twelve (12) weeks for programs with a total of three (3) credit hours graduation project and sixteen (16) weeks for graduation projects of six (6) credit hours.
- 7) The project must not be an extension of the work performed during the industrial internship. A clear distinction between the training work and the proposed project must be shown.
- 8) Any class work completed during the Graduation Project duration, will not be eligible for credit transfer at GJU.
- 9) The student is responsible for keeping legal residential status in Germany during the graduation project period.
- 10) The project documentation must be in English language, signed by the German advisor and stamped by the company/university.
- 11) As part of the defense requirements, a proof must be provided by the GJU advisor to the examiners showing the regular updates written by the student to his/her advisor at GJU.
- 12) The project must be defended at GJU, and evaluated using the regular defense evaluation form for graduation projects, to receive a grade for the project credit hours.
- 13) These general regulations are to be implemented by all GJU departments. However, each department/school may define more specific regulations based on their needs.

E: Evaluation Sheet for the Advisor in Germany



الجامعة الألمانية الأردنية
German Jordanian University

**School of Applied Medical Sciences
Department of Biomedical Engineering
Graduation Project Evaluation-Projects in Germany**

Date:

Student(s) Name:..... **I.D :**.....

Project Title:.....

Project Period: From..... **To:**.....

Advisor Contact Information

Name:

Affiliation:

Email:

Tel:

Address:

Evaluation

Deliverable	Criteria	Mark
Progress	<ul style="list-style-type: none">- Enthusiasm- Initiative- Organizational ability- Team work- Sticking to the deadlines-Ability to solve the encountered problems-Data collection and analysis	
Total Mark (100)		

Signature and Stamp



الجامعة الألمانية الأردنية
German Jordanian University

Thesis TITLE
(the two lines should represent student's thesis title)

By
(Student Name)

Supervisor:
(Supervisor Name)

Co-Supervisor:
(for joint projects and projects in Germany)

A thesis submitted in partial fulfillment of the requirements for the degree of
Bachelor of Science in Biomedical Engineering

German Jordanian University

Amman – Jordan

Month Year

G: Sample Signature Page

The thesis of **YOUR NAME** is approved:

_____	_____
(First Examiner Name)	Date

_____	_____
(Second Examiner Name)	Date

_____	_____
(Supervisor Name)	Date

German Jordanian University

Amman – Jordan

H: Declaration

Declaration

This is to declare that the graduation project entitled "-----" under the supervision of -----
--- is our own work and does not contain any unacknowledged work from any other source.

Date:

Graduation project's student(s):

Name:

Signature:

Name:

Signature:

Name:

Signature:

I: Evaluation Form



الجامعة الألمانية الأردنية
German Jordanian University
German Jordanian University
School of Applied Medical Sciences
Department of Biomedical Engineering

Graduation Project Evaluation

Date:

Student(s) Name..... ID :.....

Project Title:.....

Supervisor.....

Examiners.....

Section 1:For Project Coordinator Use

	Examiners		Supervisor
	60%		40%
	External	Internal	
Total Mark (100%)			

Signature:

Section 2: For Supervisor Use

Deliverable	Criteria	Mark
Final Report (15)	Technical Content	
	Thesis Organization	
	Data presentation and analysis	
Progress (25)	Enthusiasm, Initiative, Organizational ability, team work, and sticking to the deadlines.	
Total Mark (40)		

Section 3: For Examiner Use

Deliverable		Criteria	Mark
Final Report (40)		Technical Content (20)	
		Thesis Organization(10)	
		Data presentation and analysis(10)	
Oral Presentation (60)	Organization	Overall style (5)	
		Information presented in logical sequence (5)	
		Presentation properly cited (5)	
	Content	Introduction is attention-getting, lays out the problem well, and establishes a framework for the rest of the presentation (5)	
		Presentation content (15)	
		There is an obvious conclusion summarizing the presentation (5)	
	Skills	Eye contact (5)	
		Clear voice (5)	
		Delivery is poised, controlled, and smooth (10)	
Total Mark (100)			