

جامعة الإمام محمد بن سعود الإسلامية

كلية الهندسة

Al Imam Mohammad Ibn Saud Islamic University (IMSIU)

College of Engineering



دليل مشاريع التخرج

**GRADUATION PROJECT GUIDELINES**

1439 / 2018

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## Preface

All praise and thanks are due to Allah Subhanahu wa Taala and peace and blessings of Allah be upon Prophet Muhammad صلى الله عليه وسلم.

In pursuit of excellence and higher quality education here in the College of Engineering at Al Imam Mohammad Ibn Saud Islamic University, a new set of standards had to be established and followed strictly by all members of our college faculty. Additionally, such action will certainly reduce variances in the criteria enforced upon our college educational requirements, and eliminate the chances of diverting from the preset and pursued level of quality.

Within the context of this effort, a committee was set-up to review in details the guidelines of the students' graduation projects during the Bachelor's degree, and eventually summarize these guidelines in a standardized form within an all-inclusive booklet. The outcome of this work has also been praised and approved by the council of the College of Engineering during the second semester of 2013.

It is expected that all of our graduating students, their project advisors, and examining committees will keenly adopt and follow this set of guidelines. Definitely, we will notice the fruitful outcomes of these efforts within the next few years when such quality standards became embedded in our college culture.

Beyond doubt, the guidance and the unquestionable support we experience in the College of Engineering from our university higher administration, especially from His Excellency - Prof. Sulaiman Abdullah Aba Al-Khail - the President of the University, provide us with the desire to achieve more. The college values this support as it is crucial for its development and in attaining the high standards that it has set for itself.

**Dean, College of Engineering**

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## 1. INTRODUCTION

These graduation project guidelines are prepared in order to aid the student as he prepares for his graduation project at the College of Engineering at Al Imam Mohammad Ibn Saud Islamic University. The idea behind this work is to develop a standardize approach to the graduation project, where students, supervisors and examiners follow a unified graduation project outline, syllabus and evaluation. The objective of the graduation project is to enrich the student's knowledge by allowing him to apply his acquired undergraduate experiences and engineering skills. The cumulative student's education in science courses, engineering courses, labs and practical training, will be reflected in their graduation project and will prepare the student for a professional career after graduation. Graduation Project I is a one-semester course of one credit hour while Graduation Project II is a one-semester course of three credit hours. A list of graduation projects offered by faculty members from each engineering department will be posted at the beginning of the fall semester, and will include a brief description of each project. The College of Engineering encourages teamwork; but maximum number of student per each project must not exceed 4. The faculty member (supervisor) role is to guide the students throughout the entire length of the project.

One of the graduation project objectives is to help graduating engineers finding a future career. Hence, it is recommended that the graduation topic be related to the needs of the country and development plan. Students should not select a graduation project that was undertaken by previous students. Students are strongly advised to select new project topics, not repeat topics.

The graduation project can serve as an excellent reference for graduating students as part of the job interview process. Hence, students should produce a high

quality project by using their engineering and collaborative skills. It is essential that students meet their advisor regularly and follow project guidelines.

## **2. REGULATIONS**

1. Graduation committee: Each department should form a graduation project committee. The duties of the committee are as follows:
  - Ensure the implementation of the graduation project guidelines and regulations.
  - Announce the graduation project topics at the beginning of the first semester.
  - Receive the final draft of the project according to the deadlines announced by the department.
  - Arrange the schedule for the final exam presentation in coordination with the advisors, the examiners and the students.
  - Prepare the evaluation forms and obtain the final grades from the advisor and examiners.
2. Advisor: The advisor must hold a Ph.D degree and be a full time faculty member.
3. Examiners: Must hold a Ph.D degree and in the same engineering field.
4. Students: The students must complete the prerequisite for this course and currently enrolled in the 7th semester. Number of students in a group, per project, must not exceed four.
5. Graduation Project I & II. Graduation Project II must be a continuation of Graduation Project I unless the student secures a departmental exception.
6. Course grade: Evaluation and students grade is shown on page 22 through 24, student will not pass this course if he fails to complete any part of the project (i.e. calculation, report writing or not attending the presentation).
7. Graduation project type: The type of graduation project has to be a capstone design. A capstone design project should be planned to provide a unified effort in



developing: teamwork skills, multidisciplinary interaction, communication skills, fundamentals of engineering design processes, and application of engineering design principles to a real engineering project. The main objective is to enable students to experience real life engineering problem solving, design, team work, project execution and management. The graduation project can take different forms. Students can choose from one of the following graduation project types:

- Experimental investigation
- Numerical, modeling or simulation

### 3. **PROJECT STEPS**

A) Graduation project (GP-I) will be assigned to the faculty members and students considering the following steps:

1) Graduation Project (GP) coordinator in the academic department should provide the followings:

- a) A list of the students whose remaining credits are less than or equal to 35
- b) A list of faculty members with their teaching load.

2) GP coordinator will discuss the proposed list of students with the chairman of the department and the eligible students to register the GP-I will be selected based on following criteria:

- a) At least 100 credit hours has to be completed and university courses of level 7 and 8 will not be counted unless there is any missing university course from level 6 and below.
- b) Considering the remaining courses and the academic performance of the student, the department will evaluate whether the student is expected to graduate within the next two semesters or not.

- 3) GP coordinator will discuss with the chairman of the department about the project assignment to faculty members based on number of eligible students and teaching load of faculty members.
- 4) Faculty members, who have been considered for supervision of graduation project, will be asked to submit the G1-Form to the GP coordinator. The topic(s) will be evaluated and approved by the department to make sure that graduation project is a capstone design project. Each group of students should choose a project topic from the list posted from their department. If a student or a group of students or a company suggests a project idea to the department, then an advisor may accept the project after department approval. The GP coordinator will write down the project title in G2-Form and distribute this G2-Form to the eligible students.
- 5) The students who are eligible to register GP-I will be asked to fill G2-Form for assignment process.
- 6) Assigning students to topics would be based on their interest as much as possible considering the following criteria:
  - a) Student's GPA
  - b) Performance in relevant courses in the area of his interest. (If it's applicable)
  - c) Some Accreditation requirement states that all design work should not be done in isolation by individual student; team work is required and number of students for team work depends on the nature of the topic and tasks involved in the project (one project might be suitable for two students or more). The maximum number of students should not be more than four. The following points have to be considered:

- Each student must do specific tasks within each topic (listed as course contents in G1-Form) as much as possible and write an individual report for assigned tasks. However, as a part of the team work, each student should be aware of the main design concepts of the graduation project and submit the collective report together.
  - If a part or a subpart of the project is done individually, the student must be responsible for the writing of that part or subpart within the collective report under his name.
  - All students should present their project work together, however, each student should be evaluated separately.
- 7) The GP coordinator should submit the list of students with topic and supervisor to the department for approval.
- B) Progress report : By the mid of the semester, a progress report or presentation to the advisor should be performed in order to show what has been accomplished and indicate the remaining tasks.
- C) Draft of final report submission (14th week): A draft of the final report must be submitted a week before the final exam. Students should plan to finish the report before the exams start. Additionally, the advisor and the examining committee will have time to grade the report prior to final exams.
- D) Final project presentation (15<sup>th</sup> week of the 2<sup>nd</sup> semester): Each department will announce the date for the final oral examination of the graduation project. It is recommended to schedule the examination the week prior to final exam.
- E) Final project report submission. The report should be written according to the format shown in the Graduation Project Report Format.

- F) Evaluation of student for the award of grade in GP-I should be done based on supervision and the submitted draft report in which the achievement of the assigned tasks, that are listed in G1-Form, will be reviewed, discussed and evaluated by the GP committee. Evaluation form for GP-I is provided as G3-Form
- G) Evaluation of student for the award of grade in GP-II should be done based on supervision, written report and presentation. Examiner and Supervisor Evaluation forms are provided as G4-Form and G5-Form respectively. Students must submit the final report with hard binding to the department after GP-II only.
- H) All supervisors should submit G6-Form to the GP coordinator at the start of each semester.

#### **4. REPORT COPIES FOR EXAMINATION COMMITTEE**

Three Copies of the final draft of the report must be submitted to the advisor and the examiners on the 14th week. Advisor and examiners will write their comments on the draft report. Students are required to do the corrections and submit the final report with hard binding along soft copy and poster to the department as part of their graduation requirement. The soft copy and hard binding should contain the contact details(mobile no. and email) of the students.

#### **5. FACULTY LOAD FOR GRADUATION PROJECT SUPERVISION**

The maximum number of graduation project per faculty member is three and teaching load for graduation project supervision is shown in the following table:

<b>Project</b>	<b>No. of credit hours</b>	<b>Teaching Load for each project (team)</b>
GP-I	1	2
GP-II	3	3
<b>Note:</b>		
<ul style="list-style-type: none"> <li>• If a faculty member supervises more than 3 projects, then load will account only for 3 project</li> <li>• The maximum number of students in each graduation project shall be 4 and minimum number of students should be 2.</li> </ul>		

## **6. REPORT ORDER AND CONTENTS**

### **6.1. Preliminary Pages**

- Title (Cover) Page : The first page of the report (not to be numbered) should include the following; University, College ,Department, Project Title, Student and Supervisor Names and Date (See cover page sample)
- Anti-Plagiarism Declaration
- Abstract (maximum of one page):(In the abstract, students should introduce the problem, state the approach and scope of the work, and summarize the findings of the project. Reports submitted by multiple students should include a paragraph in the abstract that clearly specifies the author of each section of the report .
- Dedication (optional)
- Acknowledgment (optional): A student can acknowledge those who contributed towards the accomplishment of his project work .
- Table of Contents: In this table, the contents of the report with respective page numbers must be listed .
- List of Figures: In this section, title/caption of all figures in the report are to be listed together with respective page numbers .
- List of Tables: In this section, title of all tables in the report are to be listed together with corresponding page numbers .
- Nomenclature: In this section, all symbols used in the text must be properly defined including the units.

### **6.2. Report Chapters**

The chapters to be included in the report are as follows :

- Chapter 1: Introduction which includes background, statement of the problem, objectives, scope of investigation and method of approach.

- Chapter 2: Literature survey, process description, methods and technology application, etc.
- Chapter 3: This is the main body of the report which should include the Design / Design of Experiment / Software Development / Mathematical Model.
- Chapter 4: Results and Discussions
- Chapter 5: Conclusions and Recommendations. Includes the summary of the work done, problems faced, lessons learned, and suggestions for future work .

### 6.3. References

The academic style in-text citation and references should follow the MLA or Chicago Manual of Style format. A sample of references from AICHE is listed below:

From the *CEP Reference Style Guide* of the AIChE

### 6.4. General Style:

Information appears in the following general order: author, title, publisher, page numbers, and date. Individual elements of the citation are separated by commas, and a period is used at the end. If there are more than two authors, list only the first author followed by et al. The specific information that should be included depends on the type of reference.

Periodical: Author's last name and initials in bold, title of article in quotation marks, title of periodical in italics (underline if italics are not available), volume number in bold, issue number in parentheses, page numbers (inclusive), date in parentheses.

Book: Author's last name and initials in bold, title of book in quotation marks, edition number if appropriate, publisher's name, city and state of publisher, page numbers (inclusive, unless entire book is being referenced), date in parentheses.

### 6.5. Sample Citations:

1. **Schaich, J. R.**, "Estimate Fugitive Emissions from Process Equipment," Chem. Eng. Progress, **87** (8), pp. 31-35 (Aug. 1991).
2. **Homoki, G. G., and K. N. Vernekar**, "Materials Selections for Sludge Incinerator Heat Exchangers," in "Materials Performance in Waste Incineration Systems," G. Y. Lai and G. Sorell, Eds., NACE International, Houston, TX, pp. 20-1 to 20-8 (1992).
3. **Perry, R. H., and D. W. Green, Eds.**, "Mass Transfer and Gas Absorption," Chapter 14, in "Perry's Chemical Engineers' Handbook," 6th ed., McGraw-Hill, New York (1984).
4. **AICHE Center for Waste Reduction Technologies**, "Current and Potential Future Industrial Practices for Reducing and Controlling Volatile Organic Compounds," AIChE, New York, pp. 37-44 (Sept. 1992).
5. **Trebilcock, R. W., et al.**, "Reduction of Distillation Waste Streams," presented at the AIChE Summer National Meeting, Seattle, WA, Paper No. 5b (Aug. 1993).
6. **Kuhn, L. A., and E. N. Ruddy**, "Comprehensive Emissions Inventories for Industrial Facilities," Proceedings of the Air and Waste Management Association's 85th Annual Meeting and Exhibition, Kansas City, MO, Paper No. 92-139.12 (June 1992).
7. **U.S. Environmental Protection Agency**, "Compiling Air Toxics Emissions Inventories," U.S. EPA, Office of Air Quality Planning and Standards, Research Triangle Park, NC, EPA/450/4-86-010, NTIS No. PB86-238086 (July 1986).
8. "The Abnormal Situation Management Joint Research and Development Consortium," available via <http://www.iac.honeywell.com/Pub/Tech/asmwww/html> on the WWW.

### 6.6. Appendices

In this section include additional materials such as data sheets, program listings, mathematical derivation, sample calculations, etc.

### 6.7. Graduation Project Report Format

<b>Typeface:</b>	Chapter title font size	14 bold, all capital
	Section font size	12 bold, all capital
	Sub-section font size	12 bold, word first letter capital
	Text font size	12 Times New Roman

**Page Margins:** Left, Right, Upper, and Lower Margins: 1 inch each .

**Line Spacing:** Line spacing of 1.5 is required in the main body of the manuscript and single spacing for footnotes, indented quotations ,tables, etc .

**Language:** The report must be in English.

**Paper:** All copies must be on white, A4 or letter-size paper

**Pagination:** Each page of the manuscript, including all blank pages, and pages with photographs, tables, figures, maps, and computer program printouts should be assigned a number. Consistent placement of pagination, at least one inch from the paper's edge

The following pagination plan may be used :

- For the preliminary pages, use small Roman numerals (i, ii, iii, iv, etc.). The title page does not have a number but counts as page i.
- For the remainder of the manuscript use continuous pagination for text, illustrations, appendices, and bibliography- use Arabic numbers (1,2, 3, etc.).
- Figures, tables and other illustrations should be titled as well as numbered(example- Table 1 “The title of the Table”).

**Photographs, Maps, and Charts:** Large maps and charts should be avoided. Where necessary, they must be folded to 10.5 x 7.5 inches or smaller; they should be in pockets in the bound reports

**Reproducing the Report:** Three copies with original advisor and examiner's signatures should be submitted to the department chair. A soft copy of the project should also be submitted in an envelope attached to the back cover of each copy.

**Cover Page:** Sample of cover page is shown on next page.



**7. SAMPLE COVER PAGE:****Ministry of Education**

**Al Imam Mohammad Ibn Saud Islamic University  
College of Engineering  
[            ] Engineering Department**

**Project Title**

**By**

**First Name Initial Last Name (ID \_\_\_\_\_)**

**First Name Initial Last Name (ID \_\_\_\_\_)**

**Supervised by**

**Dr \_\_\_\_\_**

**Submitted in partial fulfillment of the requirements of B.Sc. Degree in [            ]  
Engineering**

**May 2018**

## 8. GRADUATION PROJECT EVALUATION

The graduation project is evaluated by the project advisor and examiners. Number of examiners should not exceed three Ph.D. faculty members from the same field, where the final project's grade consists of the averaged total grades obtained from the examiners. The basis of the evaluation GP\_I and GP\_II is as follows:

### Evaluation Form for GP-I, College of Engineering

Students Name:			
Student ID#:			
Topics	Advisor	Examiners	Total
Supervision	70 %	-	70 %
Achievements reviewed and discussed by the examiners	-	30 %	30 %
Total	70 %	30 %	100%

### Evaluation Form for GP-II, College of Engineering

Students Name:			
Student ID#:			
Topics	Advisor	Examiners	Total
Supervision	25 %	-	25 %
Report	10 %	15 %	25 %
Presentation/Discussions	15 %	35 %	50 %
Total	50 %	50 %	100%

The evaluation outcome of the examining committee should be approved by the department head and the dean of the college.

## 9. GRADUATION PROJECT FORMS:

Graduation Project forms for assigning and evaluation are presented on next pages:



### G1-Form (Topic and Contents)

Al Imam Mohammad Ibn Saud Islamic University  
College of Engineering  
Department of \_\_\_\_\_ Engineering

Name of Supervisor: \_\_\_\_\_

Student Names: \_\_\_\_\_

**Project Title:** Design of an office building with raft footing (Multi Storey Building )

Course Contents			
Week	Topics to be Covered	Phase	Semester
1-3	Introduction: Problem statement, Scope, General, Building Configuration of multi story reinforced concrete structures, Literature review of one way slab, two way slab, beams and columns	GP-I	Academic Year: 1438/1439 Semester [ 1 ]
4	Load calculation , Load combination		
5-7	Design of one way slab system.(Manual)		
8	Design of beams and columns supporting one way slab system.		
9-12	Preparing excel sheets for beams, columns and slabs of one way slab system and report writing should be finished for above work		
13-16	Design of raft footing.(Manual)	GP-II	Academic Year: 1438/1439 Semester [ 2 ]
17-18	Preparing excel sheets for raft footing		
19-21	Introduction to Structural analysis and design software		
22-24	Analysis and design of members by using commercially available software		
25-26	Cost Estimation		
23-27	Results, discussions and report writing.		

**Note: This is a sample for your reference and will need to be modified according to the graduation project requirements.**

#### Graduation Project type:

The type of graduation project has to be a capstone design. A capstone design project should be planned to provide a unified effort in developing: teamwork skills, multidisciplinary interaction, communication skills, fundamentals of engineering design processes, and application of engineering design principles to a real engineering project. The main objective is to enable students to experience real life engineering problem solving, design, team work, project execution and management. Engineering design includes development of creativity, use of open-ended problems, research skills, use of modern design theory and methodology, analysis, formulation of design problem statements and specifications, consideration of alternative solutions and communication of results

**Note: Please attach short introduction, goals and expected outcomes of Graduation Project on separate page.**





### G3-Form ( Evaluation Form For GP-I)

Al Imam Mohammad Ibn Saud Islamic University  
College of Engineering  
Department of \_\_\_\_\_ Engineering

Student Name: \_\_\_\_\_ Student ID#: \_\_\_\_\_

Project Title: \_\_\_\_\_

Advisor Name: \_\_\_\_\_

**Topics** \_\_\_\_\_ **Points**

**Supervision** . . . . . [\_\_\_\_\_/70]

This is based on overall student participation in weekly meeting, literature survey, calculation, ideas and discussion, data collection and analysis, participation in team work and cooperation with colleagues and advisor. Also, student absence should be taken into account

**Achievements reviewed and discussed by the examiners:** (Avg. Marks) . . . [\_\_\_\_\_/30]

-----

**TOTAL** . . . . . [\_\_\_\_\_/100]

Examiner Name: \_\_\_\_\_ Marks . [ /30] Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Examiner Name: \_\_\_\_\_ Marks . [ /30] Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Supervisor Name: \_\_\_\_\_ Signature: \_\_\_\_\_

Date: \_\_\_\_\_



### G4-Form (Examiner Evaluation Form For GP-II)

Al Imam Mohammad Ibn Saud Islamic University  
 College of Engineering  
 Department of \_\_\_\_\_ Engineering

Student Name: \_\_\_\_\_ Student ID#: \_\_\_\_\_

Project Title: \_\_\_\_\_

Advisor Name: \_\_\_\_\_

<u>Topics</u>	<u>Points</u>
---------------	---------------

#### Written Report :

Overall Organization. . . . . \_\_\_/1.5

English: [Grammar/ spelling/ formatting] . . . . . \_\_\_/1.5

Technical Content:

- Abstract/ Introduction/ literature survey. . . . . \_\_\_/2.0

- Calculation/design/experimental data/modeling. . . . . \_\_\_/4.0

- Results and discussion . . . . . \_\_\_/4.0

- Conclusions/Recommendation/Ethics principles and citation. . . . . \_\_\_/2.0

-----  
**TOTAL** . . . . . [ \_\_\_/15]

#### Oral Presentation :

Clarity of Presentation. . . . . \_\_\_/5.0

Technical Content: . . . . . \_\_\_/10.0

Presentation Skills: . . . . . \_\_\_/5.0

Discussion: [Participated in question answering/ interactive]. . . . . \_\_\_/15.0

**TOTAL** . . . . . [ \_\_\_/35]

**EXAMINER TOTAL GRADE** . . . . . [ \_\_\_/50]

Examiner Name: \_\_\_\_\_ Signature: \_\_\_\_\_

Date: \_\_\_\_\_



### G5-Form (Supervisor Evaluation Form For GP\_II)

Al Imam Mohammad Ibn Saud Islamic University  
College of Engineering  
Department of \_\_\_\_\_ Engineering

Student Name: \_\_\_\_\_ Student ID#: \_\_\_\_\_

Project Title: \_\_\_\_\_

<u>Topics</u>	<u>Points</u>
---------------	---------------

<b><u>Supervision</u></b> .....	[ ____/25]
---------------------------------	------------

This is based on overall student participation in weekly meeting, literature survey, calculation, ideas and discussion, data collection and analysis, participation in team work and cooperation with colleagues and advisor. Also, student absence should be taken into account

**Written Report :**

Overall Organization ..... \_\_\_/1.5

English: [Grammar/ spelling/ formatting] ..... \_\_\_/1.0

Technical Content:

- Abstract/ Introduction/ literature survey. .... \_\_\_/1.0
- Calculation/design/experimental data/modeling. .... \_\_\_/2.5
- Results and discussion ..... \_\_\_/2.5
- Conclusions/Recommendation/Ethics principles and citation ..... \_\_\_/1.5

---

**TOTAL** ..... [ \_\_\_\_/10]

**Oral Presentation :**

Clarity of Presentation ..... \_\_\_/2.5

Technical Content: ..... \_\_\_/5.0

Presentation Skills: ..... \_\_\_/2.5

Discussion: [Participated in question answering/ interactive]. .... \_\_\_/5.0

---

**TOTAL** ..... [ \_\_\_\_/15]

**SUPERVISOR TOTAL GRADE** ..... [ \_\_\_\_/50]

Supervisor Name: \_\_\_\_\_ Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**10. ANTI-PLAGIARISM DECLARATION PAGE**

**Al Imam Mohammad Ibn Saud Islamic University**

**College of Engineering**

**Anti-Plagiarism Declaration**

This is to declare that the graduation project, produced under the supervision of Dr. \_\_\_\_\_, and having the title “\_\_\_\_\_” is the sole contribution of the student(s) named below and no part hereof has been reproduced illegally (in particular, cut and paste) which can be considered plagiarism. All referenced parts have been used to support and argue the ideas herein, and have been cited properly. I/we certify that I/we did not commit plagiarize, cheat, and upheld the principles of academic honesty. I/we are responsible and liable for any consequences, if violation of this declaration is proven.

**Date:** \_\_\_\_\_

**Student Name:** \_\_\_\_\_ **Signature:**



**11. SAMPLE OF SYLLABUS PREPARED FOR A DESIGN PROJECT**

Al Imam Mohammad Ibn Saud Islamic University  
 College of Engineering  
 Department of \_\_\_\_\_ Engineering  
 Graduation Project  
 1438 /1439

Course Information	
Course Code, Number & Name	CHE 491
Prerequisite/s	Department Approval
Time, Days & Hall	TBA
Instructor	TBA
Office, Tel & e-mail	TBA
Office Hours	TBA
Teaching Assistant	-TBA

Course Description: from the College Catalog
<p>The student chooses a specific problem in engineering and tackles it through design. Flow sheet, material and energy balances, process and site selection analysis.</p> <p>Perform studies that involve applications of chemical engineering principles to the design of a selected chemical manufacturing process, design information and data, flow sheeting, market survey, processes and process selection, material and energy balances, site location and plant layout. Capacity determination. Literature survey. Preparation of set-up for practical projects.</p>

Course Objectives:
<p>After completing this course, students will:</p> <ul style="list-style-type: none"> <li>• Be knowledgeable about the kinds of design decisions that challenge process design teams</li> <li>• Have an appreciation of the key steps in carrying out a process design</li> <li>• Be familiar with the more widely used industrial separation methods</li> <li>• Understand degrees of freedom in modeling process units and flow sheets, and be able to make design specifications and follow the iterations implemented to satisfy them</li> <li>• Demonstrate the ability to write a technical report and make an oral presentation</li> <li>• Demonstrate an understanding of the professional work environment</li> </ul>

Teaching & Learning Methods
Lectures, group meeting, and computer aided design applications (ChemCAD)

<b>Textbook</b>	
<b>Title</b>	No textbook, advisor lectures and meetings

<b>Useful Resources</b>	
<ol style="list-style-type: none"> <li>1. Geankoplis C.J. "Transport Processes and Separation Process Principles", 4<sup>th</sup> edition, Prentice Hall, 2003.</li> <li>2. Coulson J.M., Richardson J.F., Backhurst J.R. and J.H. Harker "Chemical Engineering; Volume 2", 4<sup>th</sup> Ed., Butterworth Heinemann, 1991.</li> <li>3. Perry J. H. (ed.) "Chemical Engineers' Handbook", 6<sup>th</sup> edition, McGraw-Hill, 1984.</li> <li>4. Foust A.S., Wenzel L.A., Clump C.W., Maus L. and L. B. Andersen "Principles of Unit Operations" , 2<sup>nd</sup> edition, Wiley, 1980.</li> </ol> <p>Other resources</p> <ul style="list-style-type: none"> <li>• Chemical Engineering Magazine</li> <li>• Powder Technology</li> <li>• Powder and Bulk Engineering (<a href="http://www.powderbulk.com">http://www.powderbulk.com</a>)</li> </ul>	



<b>Course Evaluation for GP-I</b>			
Students Name:		Student ID#:	
Topics	Advisor	Examiners	Total
Supervision	70 %	-	70 %
Achievements reviewed and discussed by the	-	30 %	30 %
Total	70 %	30 %	100%

<b>Course Evaluation for GP-II</b>			
Students Name:		Student ID#:	
Topics	Advisor	Examiners	Total
Supervision	25 %	-	25 %
Report	10 %	15 %	25 %
Presentation	15 %	35 %	50 %
Total	50 %	50 %	100%

<b>Policy</b>	
<b>Attendance</b>	Regular attendance is expected. Student should notify the instructor of any planned absence. University regulations regarding absence will be strictly applied.
<b>Students Conduct</b>	Students should adhere to academic integrity and ethics. Cheating is absolutely not tolerated. University regulations will be enforced and applied to any student cheats, or attempts to.
<b>Student Work</b>	Will be assigned with their due times during lectures. Late work will not be accepted. All student work will be corrected, graded, handed back, and discussed further in the class upon their return.

**Note:** Any change in this form requires the approval of the **College Council**

## 12. SAMPLE OF SYLLABUS PREPARED FOR A EXPERIMENTAL /MODELING/ SIMULATION PROJECT



Al Imam Mohammad Ibn Saud Islamic University  
College of Engineering  
Department of [        ] Engineering  
Graduation Project  
1438 /1439

Course Information	
Course Code, Number & Name	CHE 491
Prerequisite/s	Department Approval
Time, Days & Hall	TBA
Instructor	TBA
Office, Tel & e-mail	TBA
Office Hours	TBA
Teaching Assistant	-TBA

Course Description: from the College Catalog
The student chooses a specific problem in chemical engineering and tackles it experimentally or theoretically. The topics covered in Research Projects option will vary from one group to another, typical content would include: Literature survey, Description of experimental procedure, Modeling and simulation, Experimental results, Sensitivity study, Discussion of results.

Course Objectives:
After completing this course, students should be able to: <ul style="list-style-type: none"> <li>• Be knowledgeable about the experimental research area performed in this project</li> <li>• Understand research methodology</li> <li>• Be familiar with data analysis and data interpretation</li> <li>• Understand mathematical modeling/simulation or statistical analysis for experimental data</li> <li>• Demonstrate the ability to write a technical report and make an oral presentation</li> </ul>

Teaching & Learning Methods
Lectures, group project meeting and computer application

Textbook	
Title	No textbook, advisor lectures and meetings

### Useful Resources

- Books related to the research or simulation area
- Journals related to project topic
- Standard testing method i.e., ASTM
- Internet

### Course Evaluation for GP-I

Students Name:		Student ID#:		
Topics	Advisor	Examiners	Total	
Supervision	70 %	-	70 %	
Achievements reviewed and discussed by the	-	30 %	30 %	
Total	70 %	30 %	100%	

### Course Evaluation

Students Name:		Student ID#:		
Topics	Advisor	Examiners	Total	
Supervision	25 %	-	25 %	
Report	10%	15 %	25 %	
Presentation	15 %	35 %	50 %	
Total	50 %	50 %	100%	

### The main topics to be covered in the report

Introduction
Background and literature survey
Experimental procedure
Modeling and simulation
Experimental results
Result& Discussion
Conclusion and Recommendation

### Policy

<b>Attendance</b>	Regular attendance is expected. Student should notify the instructor of any planned absence. University regulations regarding absence will be strictly applied.
<b>Students Conduct</b>	Students should adhere to academic integrity and ethics. Cheating is absolutely not tolerated. University regulations will be enforced and applied to any student cheats, or attempts to.
<b>Student Work</b>	Will be assigned with their due times during lectures. Late work will not be accepted. All student work will be corrected, graded, handed back, and discussed further in the class upon their return.

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