Chemical Engineering

Faculty of Engineering & Technology

University of Jordan

B.Sc. Curriculum

2005

اخر تعديل: 2005/8/10

Chemical Engineering Programs

B.Sc. In Chemical Engineering

البكالوريوس في الهندسة الكيميائية

1. Introduction

The student is required to successfully complete 161 credit hours detailed as follows:

Requirements	Credit Hours
University Requirements	27
Faculty Requirements	21
Department Requirements	113
Total	161

- ***Practical Training***

The student is required to undertake practical training after completing the required number of credit hours in accordance with the relevant regulations for training at the Faculty of Engineering and Technology.

3. Numbering System

a.

Department	Number
Civil Engineering	1
Architectural Engineering	2
Electrical Engineering	3
Mechanical Engineering	4
Chemical Engineering	5
Industrial Engineering	6
Computer Engineering	7
Mecatronics Engineering	8

b.

Course Number	Subject
0	Miscellaneous
1	Chemical Engineering Principles
2	Thermodynamics and Chemical Reaction Engineering
3	Chemical Engineering Anaysis
4	Transport Operations
5	Chemical Industries
6	Chem. Eng. Laboratories
7	Engineering Sciences
8	Design
9	Project

Example:

0	**9**	**0**	**5**	**3**	**3**	**1**
Faculty		Department		Level	Subject	Sequence

STUDY PLAN

I. University Requirements: 27 credit hours.

a. **Mandatory:** 21 credit hours as follows:

Course No.	*Course title*	*Cr. Hours*	*Prereq.*
1501101	Communication Skills / Arabic (1)	3	-
1501102	Communication Skills / Arabic (2)	3	1501101
1502101	Communication Skills / English (1)	3	-
1502102	Communication Skills / English (2)	3	1502101
1500100	Military Sciences	3	-
1900100	Computer Skills (1)	3	-
1700100	National Education	3	-

b Elective: 6 credit hours chosen by the student from the following table.

Course No.	*Course title*	*Cr. Hours*	*Prereq.*
0300100	Science and Society	3	-
0305100	Environment	3	-
1000100	Democracy	3	-
0401100	Islamic Culture	3	-
0402100	Islamic System	3	-
1701100	Philosophy	3	-
1701101	Logic	3	-
1701102	Theory of Knowledge	3	-
1702100	Human Civilization	3	-
1702101	Islamic Arab Civilization	3	-
1702102	History and Civilization of Jordan	3	-
1706100	Introduction to Socio-Psychology	3	-
1703100	History of Art	3	-
1707100	Economic Concepts and Systems	3	-

II. Faculty requirements: Mandatory 21 credit hours as follows:

Course No.	*Course title*	*Cr. Hours*	*Weekly Hours*		*Prereq.*
			Lec.	*Prac.*	
0301101	Calculus (1)	3	3	-	-
0301102	Calculus (2)	3	3	-	0301101
0302101	General Physics (1)	3	3	-	-
0302111	General Physics Lab (1)	1		3	0302101*
1901102	Computer Skills (2)	3	3	-	1900100
0904131	Engineering Graphics and Descriptive Geometry	3	2	2 drawing 2 computer	-
0906111	Engineering Workshops	1	-	3	-
0906201	Technical Writing	1	1	-	1502102
0901420	Engineering Economics	3	3	-	4th year level

*** Or concurrently**

III. Department requirements: 113 credit hours as follows:

a. **Mandatory:** 101 credit hours.

Course No.	*Course title*	*Cr. Hrs.*	*Weekly Hours*			*Prereq.*
			Lec.	*Prac.*	*Dis.*	
0303101	General Chemistry (1)	3	3	-	-	-
0303109	General Chemistry Lab	-	-	3	-	0303101*
0303102	General Chemistry (2)	3	3	-	-	0303101
0302102	General Physics (2)	3	3	-	-	0302101
0905201	Computer Applications in Chemical Engineering	2	-	6	-	1900100
0905202	Physical Chemistry	3	3	-	1	0303101
0903203	Electrical Engineering	3	3	-	1	0302102
0301201	Calculus (3)	3	3	-	-	0301102
0303211	Analytical Chemistry (1)	3	3	-	-	0303101
0303216	Analytical Chemistry Lab. (1)	1	-	3	-	0303211*
0905211	Chemical Engineering Principles (1)	3	3	-	1	0303101
0905212	Chemical Engineering Principles (2)	3	3	-	1	0905211
0905231	Mathematical Methods in Chemical Engineering	3	3	-	1	0301201
0303231	Organic Chemistry (1)	3	3	-	-	0303102
0303233	Organic Chemistry Lab.	1	-	4	-	0303231*
0905241	Fluid Mechanics	3	3	-	1	0905211
0905301	Numerical Methods in Chemical Engineering	3	2	3	1	0905201
0905322	Thermodynamics (1)	3	3	-	1	0905202 0905211
0905323	Thermodynamics (2)	3	3	-	1	0905322
0905331	Process Modeling by Statistical Methods	3	3	-	1	0905231
0905341	Transport Phenomena	3	3	-	1	0905241

Course No.	**Course title**	*Cr. Hours*	*Weekly Hours*			*Prereq.*
			Lec.	*Prac.*	*Dis.*	
0905342	Solid Particulates	3	3	-	1	0905241
0905343	Process Heat Transfer	3	3	-	1	0905341
0905381	Strength of Materials and Equipment Design	3	3	-	1	Dept. approval
0905421	Chemical Reaction Engineering (1)	3	3	-	1	0905323
0905422	Chemical Reaction Engineering (2)	3	3	-	1	0905421
0905441	Mass Transfer Operations	3	3	-	1	0905323
0905442	Heat and Mass Transfer Operations	3	3	-	1	0905343 0905441
0905451	Local Chemical Industries	3	2	3	-	0303102 0905212
0905461	Chemical Engineering Laboratory (1)	1	-	3	-	0905241 0905323
0905462	Chemical Engineering Laboratory (2)	1	-	3	-	0905342 0905343
0905463	Chemical Engineering Laboratory (3)	1	-	3	-	0905442*
0905473	Process Safety Engineering	2	2	-	-	4^{th} year level
0905481	Process Design	3	3	-	1	0901420 0905441
0905561	Chemical Engineering Laboratory (4)	1	-	3	-	0905422 0905571
0905571	Process Dynamics and Control	3	3	-	1	0905231 0905441
0905572	Environmental Engineering	3	3	-	-	0905342
0905582	Chemical Plant Design	3	3	-	1	0905441 0905451
0905598	Project (1)	1	-	-	-	Results in 121 cr. hrs. 0905481*
0905599	Project (2)	2	-	-	-	0905598

*** Or concurrently**

b. Elective: The student chooses 12 credit hours from the following Table:

Course No.	*Course title*	*Cr. Hrs.*	*Weekly Hours*			*Prereq.*
			Lec.	*Prac.*	*Dis.*	
0905401	Management for Chemical Engineering	3	3	-	-	Dept. approval
0905423	Biochemical Engineering	3	3	-	1	0905421
0905431	Process Analysis and Simulation	3	3	-	1	0905301
0905452	Petroleum Refining Engineering	3	3	-	1	0905441
0905471	Fuel and Energy	3	3	-	1	0905343
0905474	Engineering Materials Science	3	3	-	-	Dept. approval
0905475	Corrosion and Electrochemical Engineering	3	3	-	-	Dept. approval
0905509	Selected Topics in Chemical Engineering	3	3	-	-	Dept. approval
0905531	Process Optimization	3	3	-	1	0905301
0905541	Separation Processes	3	3	-	1	0905441
0905551	Extractive Metallurgy	3	3	-	1	0905342
0905553	Polymers and Plastics Engineering	3	3	-	-	0905421
0905554	Fertilizer Technology	3	3	-	-	0905441
0905597	Practical Project	3	-	-	--	5^{th} year level

4- Courses offered by the Chem. Eng. Dept.

Course No.	*Course title*	*Cr. Hours*	*Weekly Hours*			*Prereq.*
			Lec.	*Prac.*	*Dis.*	
0905201	Computer Applications in Chemical Engineering	2	-	6	-	1900100
0905202	Physical Chemistry	3	3	-	1	0303101
0905211	Chemical Engineering Principles (1)	3	3	-	1	0303101
0905212	Chemical Engineering Principles (2)	3	3	-	1	0905211
0905231	Mathmatical Methods in Chemical Engineering	3	3	-	1	0301201
0905241	Fluid Mechanics	3	3	-	1	0905211
0905301	Numerical Methods in Chemical Engineering	3	2	3	1	0905201
0905322	Thermodynamics (1)	3	3	-	1	0905202 0905211
0905323	Thermodynamics (2)	3	3	-	1	0905322
0905331	Process Modeling by Statistical Methods	3	3	-	1	0905231
0905341	Transport Phenomena	3	3	-	1	0905241
0905342	Solid Particulates	3	3	-	1	0905241
0905343	Process Heat Transfer	3	3	-	1	0905341
0905381	Strength of Materials and Equipment Design	3	3	-	1	Dept. approval
0905401	Management for chemical Engineering	3	3	-	-	Dept. approval
0905421	Chemical Reaction Engineering (1)	3	3	-	1	0905323
0905422	Chemical Reaction Engineering (2)	3	3	-	1	0905421
0905423	Biochemical Engineering	3	3	-	1	0905421
0905431	Process Analysis and Simulation	3	3	-	1	0905301
0905441	Mass Transfer Operations	3	3	-	1	0905323
0905442	Heat and Mass Transfer Operations	3	3	-	1	0905343 0905441
0905451	Local Chemical Industries	3	2	3	-	0303102 0905212

Course No.	*Course title*	*Cr. Hours*	*Weekly Hours*			*Prereq.*
			Lec.	*Prac.*	*Dis.*	
0905452	Petroleum Refining Engineering	3	3	-	1	0905441
0905461	Chemical Engineering Laboratory (1)	1	-	3	-	0905241 0905323
0905462	Chemical Engineering Laboratory (2)	1	-	3	-	0905342 0905343
0905463	Chemical Engineering Laboratory (3)	1	-	3	-	0905442*
0905471	Fuel and Energy	3	3	-	1	0905343
0905473	Process Safety Engineering	2	2	-	-	4th year level
0905474	Engineering Materials Science	3	3	-	-	Dept. approval
0905475	Corrosion and Electrochemical Engineering	3	3	-	-	Dept. approval
0905481	Process Design	3	3	-	1	0905120 0905441
0905509	Selected Topics in Chemical Engineering	3	3	-	-	Dept. approval
0905531	Process Optimization	3	3	-	1	0905301
0905541	Separation Processes	3	3	-	1	0905441
0905551	Extractive Metallurgy	3	3	-	1	0905342
0905553	Polymers and Plastics Engineering	3	3	-	-	0905421
0905554	Fertilizer Technology	3	3	-	-	0905441
0905561	Chemical Engineering Laboratory (4)	1	-	3	-	0905422 0905571
0905571	Process Dynamics and Control	3	3	-	1	0905231 0905441
0905572	Environmental Engineering	3	3	-	-	0905342
0905582	Chemical Plant Design	3	3	-	1	0905441 0905451
0905597	Practical Project	3	-	-	-	5th year level
0905598	Project (1)	1	-	-	-	Results in 121 cr. hrs. 0905481*
0905599	Project (2)	2	-	-	-	0905598

*** Or concurrently**

5. Chem. Eng .Courses plan by semester

First Year

First Semester			*Second Semester*		
Course No.	***Course Title***	***Cr. Hrs.***	***Course No.***	***Course Title***	***Cr. Hrs.***
0301101	Calculus (1)	3	0301102	Calculus (2)	3
0302101	General Physics (1)	3	0302102	General Physics (2)	3
0302111	General Physics Lab. (1)	1	0904131	Engineering Graphics and Descriptive Geometry	3
0303101	General Chemistry (1)	3	1901102	Computer Skills (2)	3
0303109	General Chemistry Lab	1	0303102	General Chemistry (2)	3
1900100	Computer Skills (1)	3			
0906111	Engineering Workshops	1			
	Total	**15**		***Total***	**15**

Second Year

First Semester			*Second Semester*		
Course No.	***Course Title***	***Cr. Hrs.***	***Course No.***	***Course Title***	***Cr. Hrs.***
0905202	Physical Chemistry	3	0905231	Mathematical Methods in Chemical Engineering	3
0905211	Chemical Engineering Principles (1)	3	0903203	Electrical Engineering	3
0301201	Calculus (3)	3	0905241	Fluid Mechanics	3
0303211	Analytical Chemistry (1)	3	0303231	Organic Chemistry (1)	3
0303216	Analytical Chemistry Lab. (1)	1	0303233	Organic Chemistry Lab.	1
0905201	Computer Applications in Chemical Engineering	2	0905212	Chemical Engineering Principles (2)	3
	Total	**15**		***Total***	**16**

Third Year

First Semester			*Second Semester*		
Course No.	***Course Title***	***Cr. Hrs.***	***Course No.***	***Course Title***	***Cr. Hrs.***
0905301	Numerical Methods in Chemical Engineering	3	0905323	Thermodynamics (2)	3
0905322	Thermodynamics (1)	3	0905342	Solid Particulates	3
0905331	Process Modeling by Statistical Methods	3	0905343	Process Heat Transfer	3
0905341	Transport Phenomena	3	0905381	Strength of Materials and Equipment Design	3
0906201	Technical Writing	1		University Elective	3
	University Elective	3		University Elective	3
	Total	**16**		***Total***	**18**

Fourth Year

First Semester			*Second Semester*		
Course No.	***Course Title***	***Cr. Hrs.***	***Course No.***	***Course Title***	***Cr. Hrs.***
0905421	Chemical Reaction Engineering (1)	3	0905422	Chemical Reaction Engineering (2)	3
0905441	Mass Transfer Operations	3	0905442	Heat and Mass Transfer Operations	3
0905461	Chemical Engineering Lab. (1)	1	0905473	Process Safety Engineering	2
0905462	Chemical Engineering Lab. (2)	1	0905463	Chemical Engineering Lab. (3)	1
0905451	Local Chemical Industries	3	005481	Process Design	3
0901420	Engineering Economics	3		Elective	3
	Elective	3		University Elective	3
	Total	**17**		**Total**	**18**

Fifth Year

First Semester			*Second Semester*		
Course No.	***Course Title***	***Cr. Hrs.***	***Course No.***	***Course Title***	***Cr. Hrs.***
0905571	Process Dynamics and Control	3	0905561	Chemical Engineering Lab. (4)	1
0905572	Environmental Engineering	3	0905599	Project (2)	2
0905582	Chemical Plant Design	3		Elective	3
0905598	Project (1)	1		University Elective	3
	Elective	3		University Elective	3
	University Elective	3		University Elective	3
	Total	**16**		***Total***	**15**