Republic of Iraq Ministry of Higher Education & Scientific Research Supervision and Scientific Evaluation Directorate Quality Assurance and Academic Accreditation International Accreditation Dept.

## Academic Program Specification Form For The Academic Year 2019-2020

University: Technology

College: Department of Chemical Engineering / Chemical Processes

Engineering

Number Of Departments In The College: 3

Date Of Form Completion: update 2019

Assistant Prof. Dr. Khlide

Assistant Prof. Dr. Rivadh Sadeo

Almukhtar

Dean's Name

Aimee

Dean's Assistant For Scientific Affairs

Date: / 2019

Signature

Dr. May Ali Muslim Al-Safar

The College Quality Assurance And University Performance Manager

/ 2019

Date:

Signature

Quality Assurance And University Performance Manager

Date:

/ 2019

Signature

## TEMPLATE FOR PROGRAMME SPECIFICATION

# HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

## PROGRAMME SPECIFICATION

This Programme Specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the programme.

1. Teaching Institution	University of Technology
2. University Department/Centre	Chemical Engineering Department/
3. Programme Title	Chemical Processing Engineering
4. Title of Final Award	B.Sc. in chemical engineering
5. Modes of Attendance offered	4 years full time
6. Accreditation	None
7. Other external influences	
8. Date of production/revision of this specification	1 October 2019
9. Aims of the Programme	
Able to engage engineering theories with taking into account environmental impact	chemical engineering practice to design and analyse process problems
	Successful leadership in chemical engineers related careers (industries,

Maintain a lifelong interest in learning for personal and professional developments.

# 10. Learning Outcomes, Teaching, Learning and Assessment Methods

## A. Knowledge and Understanding

- A1. Develop the ability to use chemical engineering principles to solve problems of practical importance to society.
- A2. Able to formulate, analyze, and solve practical chemical engineering problems.
- A3. Identify the principles of chemical engineering, including chemical reaction equilibrium and thermodynamics, mass and energy balance, transport processes, separation processes, mechanical unit operations and process control.
- A4. Able to design a chemical system, process, or component with consideration of realistic constraints including practical, economic, environmental, safety, ethical, social, and political implications.

## B. Subject-specific skills

- B1. Integrate processing steps into a sequence and apply analysis technique such as energy and mass balance.
- B2. Chemical engineering graduates will possess self-learning skills to ensure life-long learning.
- B3. Chemical engineering graduates will have selected technical elective courses, concentrations, projects, and minors that satisfy their professional interest or career goals.
- B4. Able to function and work effectively alone and in a team environment, including multidisciplinary teams.

## Teaching and Learning Methods

Lectures, Tutorials, Example Classes, Practical Applications, reports, Weekly homework problems.

#### Assessment methods

partial test (Oral questions :- multiple choice ,alternative response ), Open questions that have a definite answer , or do not have a definite answer, Quizzes, homework problems, Mid. term exams, Final exam.

### C. Thinking Skills

- C1. Perform complete mass and energy balances for chemical engineering plants.
- C2. Apply the principles of chemical equilibrium and process thermodynamics to systems with chemical reactions.
- C3. Chemical engineering graduates will be able to write coherent, concise, and accurate technical reports.
- C4. Chemical engineering graduates will be able to use computers effectively for solving chemical engineering

## Teaching and Learning Methods

Written method implies the following forms of activity: copying, taking notes, composing theses, writing

Laboratory method implies the following forms of activity: conducting experiments, showing video

Practical methods unite all the teaching forms that stimulate developing practical skills in students. Explanatory method is based on discussing a given issue.

Designing and presenting a project.

Discussion/debates. This is the most widely spread method of interactive teaching.

Case study – the teacher discusses concrete cases together with the students and they study the issue thoroughly.

#### Assessment methods

partial test (Oral questions :- multiple choice ,alternative response ), Open questions that have a definite answer, or do not have a definite answer, Quizzes, homework problems, Mid. term exams, Final exam.

## D. General and Transferable Skills (other skills relevant to employability and personal development)

- D1. Collaborate effectively within multidisciplinary team.
- D2. Work in stressful environment and within constraints.
- D3. Communicate effectively.
- D4. Search for information and engage life-long self-learning discipline.
- D5. Acquire entrepreneurial skills.

## Teaching and Learning Methods

Lectures, Tutorials, Example Classes, Practical Applications, reports, Weekly homework problems.

#### Assessment Methods

partial test (Oral questions :- multiple choice ,alternative response ), Open questions that have a definite answer, or do not have a definite answer, Quizzes, homework problems, Mid. term exams, Final exam.

First Year
Chemical Processes Engineering

Vo.		First Seme	ster	ė			No.		Second Seme	ster	8		
	Code Course	Subject	L	P	Т	Credits		Code Course	Subject	L	P	Т	Credits
1	ENGL102	English Language I	2	0	0	2	1	ENGL106	English Language II	2	0	0	2
2	MATHIII	Mathematics I	2	0	1	3	2	MATH115	Mathematics II	2	0	1	-
3	HRDE103	Human Rights & Democracy	2	0	0	2	3	CHPR121	Chemical Engineering Principles I	2	0	1	3
4	CHEM113	Chemistry I	2	2	0	3	4	CHEM122	Chemistry II	2	2	0	3
5	PHYS112	Physics	2	0	I	3	5	PHYS116	Engineering Mechanics	2	0	0	2
6	ENDR114	Engineering Drawing I	1	3	0	2	6	COPR118	Computer Programing	1	2	0	2
7	COMP104	Computer Science	1	2	0	2	7	ENDR117	Engineering Drawing	1	3	0	2
8	WRKS101	Workshop I	0	6	0	1	8	WRKS105	Workshop II	0	6	0	1
							9		Elective	1	0	0	2
		Total	12	13	2	18			Total	13	13	2	20
		Hours/week		27					Hours/week		28	-	

## Second Year

## Chemical Processes Engineering

No.		First Seme	ste	r			No.		Second Ser	nesi	er		
	Code Course	Subject	L	P	T	Credits		Code Course	Subject	L	P	Т	Credi
1	CES.P.221	Engineering Mathematics I	2	,0	1	2	1	CES.P.222	Engineering Mathematics II	2	0	1	2
2	CES.P.231	Energy Balance	2	0	1	2	2	CES.P.232	Material &Energy Balance	2	0	1	2
3	CES.P.233	Fluid Flow I	2	2	1	3	3	CES.P.234	Fluid Flow II	2	2	1	3
4	CES.P.235	Physical ChemistryI	2	2	0	3	4	CES.P.236	Physical ChemistryII	2	0	0	2
5	CES.P.211	Computer Programming II	1	2	1	2	5	CES.P.212	Computer Programming III	1	2	1	2
6	CES.P.223	Materials Eng. 1	2	0	1	2	6	CES.P.224	Materials Eng.	2	2	1	3
7	CES.P.237	Fuel's Technology	2	2	0	3	7	CES.P.238	Renewable Energy	2	0	0	2
8	CES.P.213	Democracy	1	0	0	1	8	CES.P.225	Eng.Statistics	2	2	1	3
		Total	14	8	5	18			Total	15	8	6	19
		Hours/week		27					Hours/week		29		.,

Third Year
Chemical Processes Engineering

No.		First Seme	stei				No.		Second Semo	osto	2*		
	Code Course	Subject	L	P	T	Credits	110.	Code Course	Subject	L	P	Т	Credits
1	CES.P.33	Thermodynamics I	2	2	1	3	1	CES.P.332	Thermodynamics I I	2	0	1	2
2	CES.P.32	Numerical Analysis	2	2	1	3	2	CES.P.322	Applied Mathematics in chemical Engineering	2	0	1	2
3	CES.P.33	Mass Transfer	2	2	ï	3	3	CES.P.334	Unit Operation I	2	0	1	2
4	CES.P.33 5	Chemical Reaction Kinetics	2	0	0	2	4	CES.P.336	Reactor Design	2	0	1	2
5	CES.P.33 7	Heat Transfer I	2	0	1	2	5	CES.P.338	Heat Transfer II	2	2	1	3
6	CES.P.33 9	Chemical Process Industries I	2	0	0	2	6	CES.P.3310	Chemical Process Industries II	2	3	0	3
7	CES.P.33	Bio Chemical Engineering	2	0	0	2	7	CES.P.3312	Particles& Nanotechnology	2	0	0	2
8	CES.P.33 13	Equipment Design	2	0	1	2	8	CES.P.3314	Equipment Design Using CAD	2	2	1	3
		Total	16	6	5	19			Total	16	7	6	19
		Hours/week		27					Hours/week	10000	29	-	1.7

# Fourth Year Chemical Processes Engineering

No.		First Seme	ste	r			No.		Second Ser	nes	ter		
	Code Course	Subject	L	P	T	Credits		Code Course	Subject	L	P	Т	Credits
1	CES.P.421	Project I	1	2	0	2	1	CES.P.422	Project II	1	2	0	2
2	CES.P.431	Unit Operations II	2	2	1	3	2	CES.P.432	Unit Operations I I I	2	0	1	2
3	CES.P.433	Process Dynamics	2	0	1	2	3	CES.P.434	Process Control and Instruments	2	2	1	3
4	CES.P.435	Petroleum Refinery Processing	2	0	1	2	4	CES.P.436	Petrochemical Industries	2	0	1	2
5	CES.P.437	Heterogeneous Reactor &Catalyst	2	0	1	2	5	CES.P.424	Optimization	2	0	1	2
6	CES.P.423	Industrial Management &Ethics	2	0	0	2	6	CES.P.439	Corrosion Eng.	2	0	0	2
7	CES.P.438	Environment Eng. & Industrial Safety	2	0	1	2							
		Total	13	4	5	1.5			Total	11	4	4	13
		Hours/week		22					Hours/week		19	-	10

## 13. Personal Development Planning

- Formative assessments
- · Independent research projects
- Group projects
- Assessed seminar presentations
- Reflective commentaries / logs
- Portfolio-based assessment

#### 14. Admission criteria.

- 1- The applicant must have completed a minimum of 12 years of education in school and passed all the subjects in the Higher Secondary examination.
- 2- All applicants must complete 17 years of age on or before the 31st of December in the year of admission.
- 3- Admission to higher education in Iraq is granted to students with a Secondary School Certificate, No entrance examination is required for admission to higher education, yet admission to engineering does require high scores in the Secondary School Certificate examination, these scores are determined annually by the Ministry of Higher Education and Scientific Research.

## 15. Key sources of information about the programme

please tick in the relevant boxes where individual Programme Learning Outcomes are being assessed Curriculum Skills Map

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Curriculum Skills Map

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please tick in the relevant boxes where individual Programme Learning Outcomes are being assessed Curriculum Skills Map

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please tick in the relevant boxes where individual Programme Learning Outcomes are being assessed Curriculum Skills Map

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	Course		CE.332 1	CE.322 A	CE.334 L	CE.336 F	CE.338 H	semest CE.3314 Equipment Design usin Computer	CE.3312 Particles& Nanotechn	CE.3310 C
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please tick in the relevant boxes where individual Programme Learning Outcomes are being assessed Curriculum Skills Map

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