



ATTACHMENT 2 (e)

Course Specifications

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

Water Treatment

4024773-1

**Course Specifications
(CS)**





Course Specifications

Institution: Umm Al-qura University	Date of Report: 2017
College/Department : Faculty of Applied Science/ department of chemistry	

A. Course Identification and General Information

1. Course title and code: Water Treatment/ 4024773-1			
2. Credit hours: 1			
3. Program(s) in which the course is offered. Industrial Chemistry program			
4. Name of faculty member responsible for the course: Prof. Amr L. Saber			
5. Level/year at which this course is offered: 7th level/4th year			
6. Pre-requisites for this course (if any): Spectrophotometric and Electrochemical techniques			
7. Co-requisites for this course (if any)---			
8. Location if not on main campus: El-Abdyah			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	<input checked="" type="checkbox"/>	What percentage?	100%
b. Blended (traditional and online)	<input type="checkbox"/>	What percentage?	
c. e-learning	<input type="checkbox"/>	What percentage?	<input type="checkbox"/>
d. Correspondence	<input type="checkbox"/>	What percentage?	<input type="checkbox"/>
f. Other	<input type="checkbox"/>	What percentage?	<input type="checkbox"/>
Comments:			



B Objectives

<p>1. What is the main purpose for this course? By the end of this course student will be:</p> <ol style="list-style-type: none"> 1- Know different water sources and its ability to renew 2- Familiar with quality control and environmental pollutions and effect of the pollutants on human health 3- Able to treat waste water using different methods and tests of significance
<p>2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field) The students will be mentioned to prepare an essay or a report from literature using the library, data base services, and/or websites to follow up and update the new topics of the subject of the course</p>

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact Hours
a. Requirement of water and sources	1	1
b. Water quality standards	1	1
c. Physico chemical parameters and significance-odor-temperature turbidity, density, solids, hardness, acidity and alkalinity	1	1
d. Dissolved oxygen-organic chemicals, solid substances and secondary drinking water standards	1	1
e. Determination of pH, CO ₂ , alkalinity (carbonate, bicarbonate)	1	1
f. Determination of hydroxide, chloride, fluoride, sulphate, and H ₂ S.	1	1
g. Determination of calcium, magnesium, sodium, potassium, iron (total ferrous and ferric), ammonia, nitrite and nitrate	1	1
h. Determination of phosphorous (total inorganic and organic), phenols, surfactants and pesticides	1	1
i. Mid term exam	1	1
j. Aim of water treatment	1	1
k. A brief idea of sedimentation, coagulation and flocculation	1	1
l. Water purification processes, corrosion and its control	1	1
m. Removal of toxic compounds, refractory organics, dissolved inorganic substances and different methods for water treatment	1	1
n. General revision and exam	1	1



2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	28	-	-	-	-	28
Credit	2	-	-	-	-	2

3. Additional private study/learning hours expected for students per week.	2 h
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4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy
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	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	Knowledge		
1.1	Know different water sources, quality control and data handling in analytical chemistry techniques and how to select the optimum samples	<ul style="list-style-type: none"> • Lectures • Scientific discussion • Library visits • Web-based study 	<ul style="list-style-type: none"> • Exams • web-based student performance systems • portfolios • long and short essays
1.2	Recognize the industrial pollutions present in water		
1.3	Describe analytical chemistry in manufactures and found way for purification and corrosion control		
1.4	Familiar with the separation methods for separate the pollutants		
1.5	Write selective industrial applications		
2.0	Cognitive Skills		
2.1	Develop the reverse think skills and predict the suitable methods for industrial pollutants separation from water samples	<ul style="list-style-type: none"> • Lectures • Scientific discussion • Library visits • Web-based study 	<ul style="list-style-type: none"> • Exams • web-based student performance systems • portfolios • posters • demonstrations
2.2	Create the different ideas for water treatment		
2.3	Explain the methods and ways of analytical chemistry – environmental analytical chemistry to remove industrial pollutions		
2.4	Explain the suitable method to determine the organic and inorganic pollutants in different water samples		
2.5	Plan for research program in water treatment field		
2.6	Create briefly ideas for sedimentation, coagulation and flocculation Illustrate the suitable methods of water analysis in analytical chemistry and tests of significance Evaluate the optimal parameters to select the best analytical methods		



3.0	Interpersonal Skills & Responsibility		
4.0	Communication, Information Technology, Numerical		
	<ul style="list-style-type: none"> Enhancing the ability of students to use computers and internet. Interpret chemical data Present chemical data orally. Know how to write a report. 	<ul style="list-style-type: none"> Lectures Scientific discussion Library visits Web-based study 	<ul style="list-style-type: none"> web-based student performance systems individual and group presentations
5.0	Psychomotor		
5.1	NOT APPLICABLE		
5.2			

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	Homework or activities.	--	10 %
2	First Periodic Exam.	6	20 %
3	Second Periodic Exam.	12	20 %
4	Final Exam. (2hours exam)	16	50 %
5	Total		100 %

D. Student Academic Counseling and Support

<p>1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)</p> <ul style="list-style-type: none"> We have faculty members to provide counseling and advice. Office hours: During the working hours weekly. Academic Advising for students.
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E. Learning Resources



1. List Required Textbooks
<ul style="list-style-type: none">• R. Kellner, J. M. Mermet, M. Otto, M. Valcarcel and H. M. Widmer, <i>Analytical Chemistry</i>, 2nd edition, WILEY (2014)• K. Danzer, <i>Analytical Chemistry, Theoretical and Metrological Fundamentals</i>, Springer(2014)• Industrial water pollution control, 3rd ed, W. Wesley Eckenfelder, Jr., McGraw-Hill, Inc., 2000
2. List Essential References Materials (Journals, Reports, etc.)
<ul style="list-style-type: none">• Lecture Hand outs available on the coordinator website
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
<ul style="list-style-type: none">• Gary D. Christian, Purnendu K. Dasgupta and Kevin A. Schug, <i>Analytical Chemistry</i>, 7th edition, WILEY (2014)• Douglas A. Skoog, Donald M. West, James F. Holler and Stanley R. Crouch, <i>Analytical Chemistry</i>, 7th edition, Springer (2014)• Dhruva Charan Dash. <i>Analytical Chemistry</i> (2017) PHI Learning Private Limited.
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)
<ul style="list-style-type: none">• http://www.chemweb.com• http://www.sciencedirect.com• http://www.rsc.org
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

- **Classrooms capacity (30) students.**
- **Providing hall of teaching aids including computers and projector.**

2. Computing resources (AV, data show, Smart Board, software, etc.)

- **Room equipped with computer and projector and TV.**

3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

- **No other requirements.**

G Course Evaluation and Improvement Processes




1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching Complete the questionnaire evaluation of the course in particular.
2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor <ul style="list-style-type: none">• Observations and the assistance of colleagues.• Independent evaluation for extent to achieve students the standards.• Independent advice of the duties and tasks.
3 Processes for Improvement of Teaching <ul style="list-style-type: none">• Workshops for teaching methods.• Continuous training of member staff.• Review of strategies proposed.• Providing new tools for learning.• The application of e-learning.• Exchange of experiences internal and external.
4. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution) <ul style="list-style-type: none">• Check marking of a sample of exam papers, or student work.• Exchange corrected sample of assignments or exam basis with another staff member for the same course in other faculty.
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. <ul style="list-style-type: none">• Periodic Review of the contents of the syllabus and modify the negatives.• Consult other staff of the course.• Hosting a visiting staff to evaluate of the course.• Workshops for teachers of the course.

Faculty or Teaching Staff: Prof. Amr L Saber

Signature: 

Date Report Completed: 12/1/2019

Received by: Dr. Ismail Althagafi Department Head

Signature: 

Date: 20/1/2019

