اسم المقرر:	تحليل الماء
رقم المقرر:	CHM- 244
اسم ورقم المتطلب السابق:	-
اسم ورقم المتطلب المرافق:	-
مستوى المقرر:	المستوى الرابع
الساعات المعتمدة:	2

Module Title:	Water analysis
Module ID:	CHEM-244
Prerequisite (Co-requisite):	-
Co-requisite:	-
Course Level:	4th level
Credit Hours:	2

Course) *

معلومات المقرر
(Information

Module

وصف المقرر:
Description

This course presents an overview of the need for analysis of water, how analytical methods are developed and quality control is applied and how the results of analysis are used. It will describe the physical, chemical and other relevant properties of water components and will also cover sampling, cleanup, extraction and derivatization procedures. Older techniques that are still in use will be compared to recently developed techniques and participants will be directed to future trends. A similar strategy will be followed for discussion of detection methods. In addition, the applications of analysis of water types (potable water, tap water, wastewater, seawater) will be reviewed

أهداف المقرر:
Module Aims

1	Apply an up-to-date knowledge and skills on water analysis and quality control techniques
2	Select proper water samples from different sources including seawater, MSF, boiler feed water, boiler blow down water, boiler water, produced steam, condensate water and drain effluent water
3	Practice the latest water analysis methods and use the correct analytical equipment to achieve the required results of pH value, conductivity, P&M alkalinity, chlorides, total hardness, NH3 content, total dissolved salts, free chlorine & combined chlorine, dissolved oxygen, biological oxygen demand (BOD), chemical oxygen demand (COD), silica content, iron content, phosphate, hydrazine, turbidity, sulphate content, copper content, nitrates & nitrites content, color scale, oils & hydrocarbons

4	Implement the various laboratory methods and technology in water analysis including qualitative/quantitative analysis, titrimetric, potentiometry, volammetry, polarography, colorimetry, spectrophotometry, chromatography, spectrofluroimetry, infrared spectrophotometry, atomic absorption and flame emission spectroscopy, electronic emission spectroscopy.
5	Calculate errors, limitation and accuracy of the various analytical methods and calibrate the analytical equipment.
6	Employ a proper water quality monitoring program and carry out a quality assessment of water.

مخرجات التعليم:

Learning Outcomes:

The student after finish this course will be able to

1.1	Define the water analysis knowledge and quality control techniques	1
1.2	Select proper water samples from different sources	2
2.1	Apply the chemical techniques in water analysis	3
2.2	Calculate errors, limitation and accuracy of the various analytical methods	4
4.1	Employ a proper water quality monitoring program and carry out a quality assessment of water.	5

محتوى المقرر **Course**

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Contents

ساعات التدريس (Hours)	عدد الأسابيع (Weeks)	قائمة الموضوعات (Subjects)
2	1	Introduction and Physical and chemical properties of water
2	1	water analysis and quality control techniques.
2	1	Select proper water samples from different sources including seawater, MSF, boiler feed water, boiler blow down water, boiler water, produced steam, condensate water and drain effluent water
10	5	Classical and latest water analysis methods and use the correct analytical equipment to achieve the required results of pH value, conductivity, P&M alkalinity, chlorides, total hardness, NH3 content, total dissolved salts, free chlorine & combined chlorine, dissolved oxygen, biological oxygen demand (BOD), chemical oxygen demand (COD), silica content, iron content, phosphate, hydrazine, turbidity, sulphate content, copper content, nitrates & nitrites content, color scale, oils & hydrocarbons
8	4	laboratory methods and technology in water analysis including qualitative/quantitative analysis, titrimetric, potentiometry, volammetry, polarography, colorimetry, spectrophotometry, chromatography, spectrofluroimetry, infrared spectrophotometry, atomic absorption and flame emission spectroscopy, electronic emission spectroscopy.
4	2	Analysis of biological parameter

28	14	Total

Textbook and References: الكتاب المقرر والمراجع المساندة:

ISBN	سنة النشر Publishing Year	اسم الناشر Publisher	اسم المؤلف (رئيسي) Author's Name	اسم الكتاب المقرر Textbook title
ISBN-13: 978-1439889640	2013	CRP press	Leo M.L. Nollet, Leen S. P. De Gelder	Handbook of Water Analysis, Third Edition (Hardcover)

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