

## T6. Course Specification (CS)

Institution	University of Najran	Date	26.12.1439H
College/Department	Pharmacy / Pharmaceutical chemistry		

### A. Course Identification and General Information:

1. Course title and code : <b>Pharmaceutical Analytical Chemistry-1 (PHCH 213 )</b>			
2. Credit hours : <b>3 hours (2+1)</b>			
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs) <b>Pharmaceutical Sciences</b>			
4. Name of faculty member responsible for the course : <b>Samer Aburub</b>			
5. Level/year at which this course is offered : <b>4<sup>th</sup> Level / 1438/1439 1<sup>st</sup> semester</b>			
6. Pre-requisites for this course (if any) :			
7. Co-requisites for this course (if any) :			
8. Location if not on main campus :			
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?	<input type="text"/>
c. E-learning	<input type="checkbox"/>	What percentage?	<input type="text"/>
d. Correspondence	<input type="checkbox"/>	What percentage?	<input type="text"/>
f. Other	<input type="checkbox"/>	What percentage?	<input type="text"/>
Comments التعليق:			

عليه تعليق [T1]:  
ماذا عن الجزء العملي من المقرر ؟

## B. Objectives

1. What is the main purpose for this course?  
**Describing and explaining theoretical background and principles underlying identification, separation, qualitative and quantitative analysis of chemical compounds by using both instrumental and chemical methods of analysis**
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)  
**Students are referred to specialized websites to enhance their knowledge.**

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

### Course Description :

This course focuses on various principles of basic and pharmaceutical analytical chemistry that are used for qualitative analysis (identification) for substances. This includes the fundamentals of analysis of cations and anions in matrix of substances, Fundamentals of acid-base titrations and their applications, the basic fundamentals of IR absorption and applications to identification of substances.

### 1. Topics to be Covered:

List of Topics	No. of Weeks	Contact Hours
General introduction in analytical chemistry	1	2
1. Fundamentals of the analysis of cations.		
2. Importance, separation and identification of Group-I cations	1	2
3. Importance, separation and identification of Group-IIA cations	1	2
4. Separation and identification of Group-III cations	1	2
5. Importance, separation and identification of Group-IV cations.	1	2
6. Importance, separation and identification of Group-V and VI cations.	1	2
7. Fundamentals of the analysis of Anions.	1	2
8. Importance and identification of Group-I anions		
9. Importance and identification of Group-II anions.	1	2
10. Importance and identification of the miscellaneous group.		
11. Fundamentals of acid-base titrations.	4	8
12. Application of acid-base titrations		

13. Methods of spectroscopic identification of drug substances. IR spectroscopy: - theory, requirements for IR absorption, modes of vibration, - Factors affecting intensity and position of the functional group bands - instrumentation, - interpretation of the molecular structure of the compounds -	2	4
14. Application of IR spectroscopy as qualitative tool	1	2
<b>Total</b>	<b>15</b>	<b>30</b>
<b>2. Practical sessions</b>		
<b>List of experiments in this course</b>		
Expirement1: Introduction to laboratory health and Safety procedures and tools names tutorial Experiment 2: Qualitative Analysis of Group I Cations Experiment 3: Qualitative Analysis of Group II Cations Experiment 4: Qualitative Analysis of Group III and IV Cations Experiment 5: Qualitative Analysis of Group V Cations Experiment 6: Qualitative Analysis of Group VI Cations Experiment 7: Qualitative Analysis of Group I anions Experiment 8: Qualitative Analysis of Group II anions Experiment 9: Qualitative Analysis of Group III anions Experiment 10: Determination of PH in solution Experiment 11: Acid-base titration Practical exam weak number 16	15	30
<b>Total</b>	<b>15</b>	<b>30</b>

عليه تعليق [T2]: حدد لكل تجربة على حدة عدد الأسابيع المخصصة لها

1. Course components (total contact hours and credits per semester):

	Lecture	Tutorial	Laboratory or studio	Practical	Other:	Total
Contact Hours	30	-	-	30	-	50
Credit	2	-	-	1	-	3

3-Additional private study/learning hours expected for students per week : **2 hours per week**

4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy.

On the table below are the five NQF Learning Domains, numbered in the left column.

**First**, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table)

**Second**, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes.

**Third**, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each course learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process. (Courses are not required to include learning outcomes from each domain).

Code #	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	<b>Knowledge</b>		
1.1	Describe the fundamentals of identification and separation of cations and anions as well as acid-base titrations	1. Lectures 2. Tutorials	1. Theoretical exams 2. Observation card
1.2	Describe the basic knowledge of IR spectrophotometry as an identification tool for compounds		◀
2.0	<b>Cognitive Skills</b>		
2.1	Explain the possible interactions or interferences of some compounds with analysis of other compounds.	1. Lectures, tutorials and brain storming	1. Theoretical exams 2. Observation card
2.2	Plan strategies for the solution of analytical problems	2. Solving of analytical Problems	◀

[T3]: تعليق عليه  
Final Exam

[T4]: تعليق عليه  
Final Exam  
Practical Exam

Code #	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
		3. carrying laboratory experiment	
<b>3.0</b>	<b>Interpersonal Skills &amp; Responsibility</b>		
3.1	Use properly the chemical compounds in the laboratory according to the rules of good laboratory and storage practice	Practical lab: Demonstration of analytical experiments	Observation card in labs Practical exam
<b>4.0</b>	<b>Communication, Information Technology, Numerical</b>		
4.1	Operate IR spectrophotometer	Practical lab	Observation card in labs Practical exam
4.2	Demonstrate practical skills of preparation of standard solutions and end point determination	Practical lab (Calculation of the concentrations of the substances in different ways)	
<b>5.0</b>	<b>Psychomotor</b>		
5.1	Perform the titration of sample in professional way	Practical lab (Demonstration of titration experiments)	Practical exam

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task (e.g. essay, test, Quizzes, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	<b>Quiz on theoretical part</b>	<b>4-5</b>	<b>5%</b>
2	<b>Group Seminar or Essay</b>	<b>8-9</b>	<b>10%</b>
3	<b>Observation card in lectures</b>	<b>2-12</b>	<b>5%</b>
4	<b>Midterm exam</b>	<b>8</b>	<b>20%</b>
5	<b>Observation card in lab</b>	<b>2-12</b>	<b>5%</b>
6	<b>Final practical Exam</b>	<b>16</b>	<b>15%</b>
7	<b>Final exam</b>	<b>17</b>	<b>40%</b>
8	<b>Total</b>		<b>100%</b>

#### D. Student Academic Counseling and Support

- |   |
|---|
| 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) |
| <b>6 hours</b>  |

#### E. Learning Resources

- |   |
|---|
| 1. List Required Textbooks :  |
| <ol style="list-style-type: none"> <li><b>Analytical Chemistry by Christian, G.D. 4th Edition, John Wiley and Sons: New York, 1986.</b></li> <li><b>Modern Analytical Chemistry by David Harvey 1st ed, 2000; ISBN 0-07-237547-7; McGraw-Hill.</b></li> <li><b>Qualitative of inorganic analysis Vogel's 5<sup>th</sup> edition, New York</b></li> <li><b>Practical pharmaceutical analysis by A.H. Beckett and J.B. Stenlake; 4th Ed, Part (1), the press London, 1988.</b></li> </ol> |
| 2. List Essential References Materials (Journals, Reports, etc.)  |
| 3. List Electronic Materials Web Sites, Facebook, Twitter, etc.   |
| <b>www.dlaf.nu.edu.sa</b>   |
| 4. Other learning material such as computer-based programs/CD, professional standards or regulations and software.  |
| <b>Excel software for calculations and drawing</b>  |

#### 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.)  |
| <ol style="list-style-type: none"> <li><b>Suitable lecture room equipped with projector.</b></li> <li><b>Suitable laboratories equipped with health and safety tools.</b></li> </ol> |
| 2. Computing resources (AV, data show, Smart Board, software, etc.)  |
| <b>Data show</b>   |
| 3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)  |
| <b>pH meters, Burets, Pipets, Conical flasks and Test tubes</b>  |

#### G. Course Evaluation and Improvement Processes:

- |  |
|--|
| 1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching  |
| <ol style="list-style-type: none"> <li><b>Questionnaires</b></li> <li><b>Direct questions (Provoke students' initiative by asking questions)</b></li> <li><b>Observation card in lectures</b></li> </ol> |

2. Other Strategies for Evaluation of Teaching by the Instructor or by the department

**Course report and course portfolio**

3. Processes for Improvement of Teaching:

1. Effective training and workshops for members of staff.
2. Exchange of experiences with similar institutes if possible.
3. Availability of textbooks, references, periodicals and journals.
4. Encouragement of student to participate in the research field
5. Evaluation of the student for the course

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)

- a- Faculty member of a sample of student assignment,
- b- Periodic exchange for advisory staff member.
- c- Small group discussion in the laboratory under faculty supervision on rotation

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement

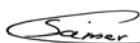
**Each semester we periodically review the course contents, effectiveness, course ILOs according to the progression in the field worldwide**

- a- Assessment of course content in relation to the progressing knowledge in the field.
- b- Assessment of course content in relation to the changing demands worldwide.
- c- Course report and course portfolio
- d- Trend analysis
- e- Use of the software for measuring of the ILOs of the course

**[T5]: تعليق عليه:**  
Monitoring and Evaluating the strategies of teaching and Assessment  
Monitoring and Evaluating the strategies of Measuring the Achievement of the Course Intended Learning Outcomes

Name of instructor: Samer Aburub

Signature :



Date Report Completed 26.12.1439 H

Name of field experience teaching staff: Prof. Dr. Ashraf M. M. Mahmoud

Program coordinator: Prof. Dr. Ashraf M. M. Mahmoud

Signature:

Date received: