

Kingdom of Saudi Arabia
The National Commission for
Academic Accreditation & Assessment



COURSE SPECIFICATION
(Inorganic Chemistry 3, 402424-3)

1435 / 1436 H

Course Specification

Institution: Umm Al-Qura University
College/Department: Faculty of Applied Sciences/ Chemistry Department

A. Course Identification and General Information

1. Course title and code: Inorganic Chemistry 3, 402424-3
2. Credit hours: Three theoretical hrs.
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs) Pure Chemistry
4. Name of faculty member responsible for the course: Prof. Abdalla Mohamed Khedr
5. Level / year at which this course is offered: 7th level / 4
6. Pre-requisites for this course (if any): Inorganic Chemistry 2, 402323-3
7. Co-requisites for this course (if any): —
8. Location if not on main campus: —

B. Objectives

1. Summary of the main learning outcomes for students enrolled in the course: A full advanced knowledge in inorganic chemistry about: <ul style="list-style-type: none">• Vibrational spectroscopy of inorganic compounds and character tables.• Solid state chemistry such as: defects, electrical conductivity, and chemical vapor deposition.• Chemistry of common inorganic materials such as glasses, ceramics, cement, catalysts, inorganic fibers, and carbon Nano tube.
2. Briefly describe any plans for developing and improving the course that are being implemented. (eg increased use of IT or web based reference material, changes in content as a result of new research in the field)

- Encourage students to prepare an essay or a report from literature by using the library, data base services, and/or internet to follow up and update the new topics of the inorganic chemistry.
- Using smart classes for teaching in lectures.

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:		
Topic	No of Weeks	Contact hours
Vibrational spectroscopy.	2	6
Character tables of vibrational spectra for inorganic compounds.	1	3
Solid state chemistry (crystalline and amorphous structures as well as defects in solid state.	2	6
Electrical conductivity of solids.	1	3
Chemical vapor deposition of solids.	1	3
Chemistry of glasses.	1	3
Chemistry of ceramics.	1	3
Chemistry of cement.	1	3
Inorganic homogenous and heterogenios catalysis	2	6
Inorganic fibers.	1	3
Carbon nanotubes.	1	3

2- Course components (total contact hours per semester):			
Lecture: 42	Tutorial: _____	Practical/Fieldwork /Internship:	Other: _____

4. Development of Learning Outcomes in Domains of Learning For each of the domains of learning shown below indicate:

- A brief summary of the knowledge or skill the course is intended to be developed.
- A description of the teaching strategies to be used in the course to develop that knowledge or skill.
- The methods of student assessment to be used in the course to evaluate learning outcomes in the domain concerned.

a. Knowledge

(i) Description of the knowledge to be acquired:

At the end of this course, student will be able to:

- Describe the vibrational spectroscopy of inorganic compounds and character tables.
- Understand the main subjects of solid state chemistry such as: defects, electrical conductivity, and chemical vapor deposition.
- Memorize the chemistry of common inorganic materials such as glasses, ceramics, cement, catalysts, inorganic fibers, and carbon nanotube.

(ii) Teaching strategies to be used to develop that knowledge:

- Using internet to prepare some reports in different topics of inorganic chemistry
- Contentious scientific discussions during the lectures.
- Resolving problems presented during lectures in homework.

(iii) Methods of assessment of knowledge acquired:

- Preparing scientific reports.
- Written mid-term and final exams.
- Attendance and participation in scientific discussion during the lectures.

b. Cognitive Skills

(i) Cognitive skills to be developed:

By ending of this course, the student will have the ability to:

- Develop a scientific way to solve problems and think proper to solve problems.
- Solve typical and lengthy problems manually and using special software.

(ii) Teaching strategies to be used to develop these cognitive skills:

<ul style="list-style-type: none"> • Grouping research study a defiant subject in the course content and make an open discussion. • Giving examples for students and practicing under the supervision of a lecturer. • Assigning student's tasks duties that include open tasks designed for the application of prediction and analysis skills, problem solving.
<p>(iii) Methods of assessment of student cognitive skills:</p> <ul style="list-style-type: none"> • A student follow-up is maintained using quick questions style. • A periodic tests. • Adopting quizzes or fast exam.
<p>c. Interpersonal Skills and Responsibility</p>
<p>(i) Description of the interpersonal skills and capacity to carry responsibility to be developed:</p> <ul style="list-style-type: none"> • The development of the student's ability to self-reliance and responsibility. • The development of the student to accept the opinion of his colleague in his participation to perform an active presentation for the topic related to the course.
<p>(ii) Teaching strategies to be used to develop these skills and abilities:</p> <ul style="list-style-type: none"> • Periodic duties that carried out in individual to develop the skill of student to take responsibility and self-reliance. • Divide the student in teams to perform some joint reports. • Encourage the solving problems in groups during lecture.
<p>(iii) Methods of assessment of student interpersonal skills and capacity to carry responsibility:</p> <ul style="list-style-type: none"> • Evaluation and assessment of home-work and group reports.
<p>d. Communication, Information Technology and Numerical Skills</p>
<p>(i) Description of the skills to be developed in this domain:</p> <ul style="list-style-type: none"> • using computers and internet in making the calculations and to identify recent research relevant to the course in good skills. • The ability to perform mathematical calculations and data analysis and described in a statistical picture and find out conclusions from them.
<p>(ii) Teaching strategies to be used to develop these skills:</p>

<ul style="list-style-type: none"> • The use of the international information network (internet). • Using computers in the training room of the department. • Organizing group visits to the Central Library.
<p>(iii) Methods of assessment of students numerical and communication skills:</p> <ul style="list-style-type: none"> • Numerical skills through solving problems • Ask questions that test the student's ability to interpret simple statistical information. • Communication with others: the instructor – the students.
<p>e. Psychomotor Skills (if applicable)</p>
<p>(i) Description of the psychomotor skills to be developed and the level of performance required:</p> <ul style="list-style-type: none"> • Ability to proper scientific thinking with skill and effectiveness in chemical topics.
<p>(ii) Teaching strategies to be used to develop these skills:</p> <ul style="list-style-type: none"> • Training of students in the lecture within the proper scientific thinking.
<p>(iii) Methods of assessment of student psychomotor skills:</p> <ul style="list-style-type: none"> • Not applied now.

5. Schedule of Assessment Tasks for Students During the Semester:			
Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Proportion of Final Assessment
1	Class activities, Attendances and Duties	Throughout the Term	10%
2	Mid-Term Exam (s)	5-14	40%
3	Final Exam	End of the Term	50%
4	Total		100%

D. Student Support

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

E. Learning Resources

<p>1. Required Text(s):</p> <ul style="list-style-type: none"> • All my lectures are presented to the students.
<p>2. Essential References:</p> <ul style="list-style-type: none"> • Inorganic Chemistry, Gary L. Miessler, Paul J. Fischer, Donald A. Tarr, 5th ed., Prentice Hall, 2013.
<p>3- Recommended Books and Reference Material (Journals, Reports, etc) (Attach List):</p> <ul style="list-style-type: none"> • Inorganic Chemistry, Duward Shriver, Peter Atkins, W. H. Freeman; 5th ed., 2009.
<p>4- Electronic Materials, Web Sites etc:</p> <ul style="list-style-type: none"> • http://www.chemweb.com • http://www.sciencedirect.com
<p>5- Other learning material such as computer-based programs/CD, professional standards/regulations</p> <ul style="list-style-type: none"> • Microsoft PowerPoint, Microsoft Word, Microsoft Excel. • Videos on advanced inorganic chemistry. • CD for learning advanced inorganic chemistry.

F. Facilities Required

<p>Indicate requirements for the course including size of classrooms and laboratories (ie number of seats in classrooms and laboratories, extent of computer access etc.)</p>
<p>1. Accommodation (Lecture rooms, laboratories, etc.):</p> <ul style="list-style-type: none"> • Providing classrooms with teaching aids.
<p>2. Computing resources:</p> <ul style="list-style-type: none"> • One slide show (Data Show), computers and TV.
<p>3. Other resources (specify --eg. If specific laboratory equipment is required, list requirements or attach list):</p> <ul style="list-style-type: none"> • No other requirements.

G. Course Evaluation and Improvement Processes

<p>1- Strategies for obtaining student feedback on effectiveness of teaching:</p> <ul style="list-style-type: none">• Carry out and complete the questionnaire evaluation of the course in particular.
<p>2- Other strategies for evaluation of teaching by the instructor or by the department:</p> <ul style="list-style-type: none">• Observations and the assistance of colleagues.• Evaluating the course outside the department.• Prepare a course report for based on the results of the students to give us an indication about the planned outputs.
<p>3- Processes for improvement of teaching:</p> <ul style="list-style-type: none">• The application of e-learning.• Continuous training of member staff.• Workshops for teaching methods.• Exchange of experiences internal and external.
<p>4- Processes for verifying standards of student achievement (eg. check marking by an independent faculty member of a sample of student work, periodic exchange and remarking of a sample of assignments with a faculty member in another institution)</p> <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.
<p>5- Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement:</p> <ul style="list-style-type: none">• Hosting a visiting staff to evaluate the course.• Workshops for teachers of the course.• Periodic review of the contents of the syllabus and modify the negatives.• Consult other staff of the course.