Kingdom of Saudi Arabia

The National Commission for

Academic Accreditation & Assessment

COURSE SPECIFICATION

(Selected Topics in Inorganic Chemistry, 402454-2)

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: **Selected Topics in Inorganic Chemistry, 402454-2**
2. Credit hours: **2 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. Nashwa El-Metwaly**
5. Level / year at which this course is offered: **8th level**
6. Pre-requisites for this course (if any): **Inorganic Chemistry 3, 402424-3**
7. Co-requisites for this course (if any): **Nothing**
8. Location if not on main campus:

B. Objectives

1. Summary of the main learning outcomes for students enrolled in the course: - This course is designed to discuss topics that are not covered in the program along the study levels in Inorganic Chemistry.
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): (Increasing the use of IT or web based reference material - Major changes in the course topics. - Addition of subjects is completely ignored along the previous levels. - Executing all objectives.

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**
Bio-inorganic chemistry.	**1**	**2**
Chemistry of special class of inorganic compounds such as : metal-organic framework(MOF),cages, Chains, rings, clusters….etc.	**2**	**4**
Chemistry of selected elements.	**1**	**2**
Inorganic material chemistry.	**2**	**4**
Homogeneous catalysis.	**1**	**2**
Heterogeneous catalysis.	**2**	**4**
The mechanism study of ligand substitution and electron transfer processes in coordination compounds (MOT).	**1**	**2**
The connections between small molecule inorganic and biological macromolecular metal-catalyzed processes.	**2**	**4**
Advanced synthetic techniques for inorganic and organometallic compounds.	**2**	**4**

2- Course components (total contact hours per semester):			
Lecture: **28 hrs.**	Tutorial: ----	Practical/Fieldwork/Internship: ---	Other: -----

3. Additional private study/learning hours expected for students per week (This should be an average for the semester not a specific requirement in each week):

- The program includes number of hours for tutorials 10 hrs in the term.
- Searching in the Internet and Databases.

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 develop;
- 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:

- Aims to knowing the principles of bio-inorganic chemistry.
- Knowing the chemistry of selected elements.
- Knowing the basics of inorganic material elements.
- Knowing the chemistry of homogeneous and heterogeneous catalysis.
- Knowing the different coordination theory.
- Knowing the advanced synthesis techniques for inorganic and organometallic compounds.

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

- Lecturers – scientific negotiation in-between.
- Self learning - learning through right and wrong.
- Grouping scientific research in different topics.

(iii) Methods of assessment of knowledge acquired:

- Two mid- term exams.
- Homework in electronic learning.
- Final exam.
- Attendance and participation.

b. Cognitive Skills

(i) Cognitive skills to be developed:

- Tutorials and dealing with topics related to course contents.
- Discussing typical and lengthy problems manually and using special software.

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

-A number of homework is assigned to students in electronic learning.
- grouping research each study a defiant subject in the course content and make an open discussion.

(iii) Methods of assessment of students cognitive skills:

- A student follow-up is maintained using quick questions style.
- Encouraging the student to increase the lecture attendance.
- Adopting quizzes or fast exam.
- Deals with different ambiguous quizzes.

c. Interpersonal Skills and Responsibility

(i) Description of the interpersonal skills and capacity to carry responsibility to be developed:

- Academic supervision is required.
- A cooperation routine work should be maintained with other academic members.

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

Students must learn how to:

- prepare a scientific report.
- take few minutes in the lecture to make a channel with the students and give them advice for the best strategy for their personal duets
- search on the internet
- use the motivation strategy gives the great effect on the personal responsibility
- deal with the lost lectures that he missed.
- do that independently and through discussions with the others.
- open a general discussion with students in the area of educational issues.

(iii) Methods of assessment of students interpersonal skills and capacity to carry responsibility:

- Fellow up the scientific level of students through the continues negotiation during the lectures.

d. Communication, Information Technology and Numerical Skills

(i) Description of the skills to be developed in this domain:

- Submitting reports or essays and exchanging information between the students through the conventional ways.
- Encourage the students for cooperative work in-between
- The communication skills may be improved by using the databases and the electronic mails.

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

- Using computers.
- Using special educational packages.

(iii) Methods of assessment of students numerical and communication skills:

- Communication with others: the instructor – the students
- IT through the Internet
- Numerical skills through solving problems
- Preliminary evaluation is required.
- Final evaluation is subjected to various skills e.g. student communication until the final tests.

e. Psychomotor Skills (if applicable)

(i) Description of the psychomotor skills to be developed and the level of performance required:

- None

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

- None

(iii) Methods of assessment of students psychomotor skills:

- None

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

1. Arrangements for availability of faculty for individual student consultations and academic advice (include amount of time faculty are available each week):

- Five office hours in two days per week.

E. Learning Resources

1. Required Text(s):

- All my lectures are presented as electronic copy to the students.

2. Essential References:

- The book will vary based on the instructor.

3- Recommended Books and References (Journals, Reports, etc) (Attach List)

- There is no recommended books due to are varies from dr. to another.

4-.Electronic Materials, Web Sites etc:

- Springer , Sciencedirect and different sites for electronic books.

5- Other learning material such as computer-based programs/CD, professional standards/regulations:

- None

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (ie

number of seats in classrooms and laboratories, extent of computer access etc.) - A Computer Lab. With 20 PCs for 30 students.
1. Accommodation (Lecture rooms, laboratories, etc.): - Main hall for lecturing 50 students.
2. Computing resources: - 20 computer sets are needed for network connection.
3. Other resources (specify --eg. If specific laboratory equipment is required, list requirements or attach list) - Providing educational facilities and models in the lecture.

G. Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching: - The student should evaluate the course together with the instructor. - An academic evaluation is required continuously. - Renewing the course contents periodically.
2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department: - Evaluating the course at the departmental levels. - Evaluating the course outside the department.
3. Processes for improvement of teaching: - Training programs and workshops for Staff members to improve the educational process level.
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) - We try to carry out it but it does not applied until now.
5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement: - A comparison of the course level should be made with similar courses at foreign universities.