	SULTAN QABOOS UNIVERSITY **COLLEGE OF SCIENCE** **DEPARTMENT OF CHEMISTRY** **BACHELOR OF SCIENCE IN CHEMISTRY** **COURSE OUTLINE**

I. COURSE INFORMATION		
COURSE CODE	CHEM 4411	
COURSE TITLE	Inorganic Chemistry II	
OMAN QUALIFICATION FRAMEWORK (OQF) LEVEL	**7**	
CREDIT HOURS	3	
CONTACT HOURS	45	
PRE-REQUISITES	CHEM3311	
CO-REQUISITES	NONE	
EQUIVALENT COURSES	NONE	
INCOMPATIBLE COURSES	NONE	
COURSE CATEGORY	☐ University Requirement	☐ University Elective
	☐ College Requirement	☐ College Elective
	☒ Department Requirement	☐ Department Elective
	☐ Major Requirement	☐ Major Elective
	☐ Specialization Requirement	☐ Specialization Elective
	☐ Other (specify):	
COURSE OWNER	College: Science	Department: Chemistry

	Center:		Unit:
DELIVERY MODE	☒ Face to Face	☐ Blended	☐ Online
COURSE TYPE	☒ Lecture	☐ Lecture/Lab	
	☐ Lecture/Seminar	☐ Lecture/Studio	
	☐ Lecture/Tutorial	☐ Lecture/Lab/Tutorial or Seminar	
	☐ Tutorial	☐ Laboratory (Practical)	
	☐ Field or Work Placement	☐ Studio	
	☐ Seminar	☐ Internship	
	☐ Workshop	☐ Project	
	☐ Thesis	☐ Other (specify):	
LANGUAGE OF INSTRUCTION	English		
COURSE DESCRIPTION	This is the second inorganic chemistry course which together with CHEM 4415 is aimed at introducing students to transition metal coordination chemistry. This course deals with theoretical aspects of transition metal coordination chemistry covering structures, nomenclature, bonding, magnetic and electronic properties, reactions and applications of coordination compounds. The concepts learnt in CHEM 4411 are applied in the synthesis and characterization of coordination complexes in CHEM 4415. Together CHEM 4411 and CHEM 4415 prepare students to undertake final year projects in coordination chemistry.		
TEACHING AND LEARNING STRATEGIES	☐ Augmented Reality	☐ Flipped Classroom	
	☐ Blended Learning	☒ Problem-Based Learning	
	☐ Discovery-Based Learning	☐ Project-Based Learning	
	☒ Student-Led Learning	☒ Team-Based Learning	
	☐ Work-Based Learning	☐ Other (specify):	
ASSESSMENT COMPONENT AND WEIGHT	☒ In-term examination(s) (40 %)	☒ Quizzes (10%)	☐ Other (specify): (%)
	☐ Homework assignments	☐ Project	
	☒ Final examination (50%)	☐ Practical/ Lab	
TEXTBOOKS AND EDUCATIONAL MATERIAL	1. Inorganic Chemistry, Miessler & Tarr, Prentice-Hall, 3rd edition 2. Inorganic Chemistry, Catherin Houscroft and Alan G. Sharpe, Pearson College Div, 3rd edition		
GRADING METHOD	X A-F Scale	☐ Pass/Not Pass	☐ Other (specify):

GRADING METHOD DESCRIPTION			
A-F GRADING SCALE:	Range	Letter Grade	Description
	90 – 100	A	**Exceptional performance:** All course objectives were achieved and met in a consistently outstanding manner.
	86 – 89.9	A-	
	81– 85.9	B+	**Very Good Performance:** The majority of the course **objectives** were achieved (the majority being at least two-thirds) and met in a consistently thorough manner.
	77 – 80.9	B	
	73 – 76.9	B-	
	68 – 72.9	C+	**Satisfactory Performance:** At least most of the course objectives have been achieved and met satisfactorily.
	64 – 67.9	C	
	60 – 63.9	C-	
	55 – 59.9	D+	**Minimally Acceptable Performance:** The course **objectives** met at a minimally acceptable level.
	50 – 54.9	D	
	0 – 49.9	F	**Unacceptable performance:** The course objectives were not met at a minimally acceptable level
PASS/NOT PASS:			
OTHER:			

II. SEMESTER INFORMATION			
SEMESTER/YEAR	Fall 2024	**SECTION(S)**	10
DAY AND TIME	xxx	**VENUE(S)**	xxx
COURSE COORDINATOR	xxx	**COURSE TEAM**	None
COORDINATOR OFFICE	xxx	**OFFICE HOURS**	xxx
COORDINATOR EXTENSION	xxx	**COORDINATOR EMAIL**	xxx

III. ALIGNMENT OF COURSE LEARNING OUTCOMES (CLO), PROGRAM LEARNING OUTCOMES (PLO), GRADUATE ATTRIBUTES (GA), AND OMAN QUALIFICATION FRAMEWORK (OQF) CHARACTERISTICS			
CLO	**PLO**	**SQU GA**	**OQF CHARACTERISTICS**

1. Introduce students to the theoretical concepts of transition metal coordination chemistry	1 2	1 2 6	1(7)
2. Prepare students to interpret magnetic data and electronic spectra of coordination compounds	3	2 6	2(7) 3(7) 4(7)
3. Prepare students to undertake final year projects in coordination chemistry	4	1 2	2(8) 5(7)
4. Make students aware of the applications of coordination chemistry in their lives	5	2 5	2(7)

IV. COURSE LEARNING OUTCOMES (CLOS) AND ASSESSMENT CRITERIA AND METHODS (FOR EACH CLO)

CLO1: Introduce students to the theoretical concepts of transition metal coordination chemistry

ASSESSMENT CRITERIA (TO ACHIEVE THIS OBJECTIVE, THE STUDENT MUST)		**ASSESSMENT METHODS**
A)	Be able to, name and write molecular formulas of simple coordination compounds	Assignment, Exam 1
B)	Distinguish between their isomers	Assignment, Exam 1
C)	Discuss the factors that determines the coordination numbers of complexes and identify and draw the common geometries.	Assignment, Exam 1

CLO2: Prepare students to interpret magnetic data and electronic spectra of coordination compounds

ASSESSMENT CRITERIA (TO ACHIEVE THIS OBJECTIVE, THE STUDENT MUST)		**ASSESSMENT METHODS**
A)	Demonstrate accurate use of the method of analysis of magnetic data.	Exam 2, Final Exam.
B)	Demonstrate accurate use of the method of analysis of electronic spectra.	

CLO3: Prepare students to undertake final year projects in coordination chemistry

ASSESSMENT CRITERIA (TO ACHIEVE THIS OBJECTIVE, THE STUDENT MUST)		**ASSESSMENT METHODS**
A)	Analysis spectra independently.	Exam 2, Final Exam.

CLO4: Make students aware of the applications of coordination chemistry in their lives

ASSESSMENT CRITERIA (TO ACHIEVE THIS OBJECTIVE, THE STUDENT MUST)		ASSESSMENT METHODS
A)	Know of some applications of coordination chemistry in our lives.	Final Exam.

V. COURSE CONTENT AND SCHEDULE				
WEEK	**LECTURES #**	**TOPICS/ SUBJECTS**	**READINGS/ CHAPTERS**	**REMARKS (e.g., ASSESSMENTS)**
1	1-2	Coordination Chemistry I: Structures and Isomers	Chapter 9	20
2	3-4			
3	5-6			
4	1-2	Coordination Chemistry II: Bonding	Chapter 10	30
5	3-4			
6	5-6			
7	7-8			
8	1-2	Coordination Chemistry III: Electronic Spectra	Chapter 11	30
9	3-4			
10	5-6			
11	7-8			
12	1-2	Coordination Chemistry III: Reactions and Mechanisms	Chapter 12	20
13	3-4			
14	5-6			
15	7-8			

VI. ADDITIONAL INFORMATION (e.g., RUBRICS, etc.)

VII. STUDENTS RESPONSIBILITIES	
It is the student's responsibility to know and comply with all University Academic Regulations relevant to participation in this course. These regulations specifically include attendance requirements and student academic code of conduct.	
ACADEMIC INTEGRITY	The University expects the students to approach their academic endeavors with the highest academic integrity. Please refer to the **Undergraduate Academic Regulations**.
ADD AND DROP	Students who wish to drop or add the course should review the **Undergraduate Academic Regulations**.
ATTENDANCE	Sultan Qaboos University has a clear requirement for students to attend courses, detailed in the **Undergraduate Academic Regulations**.
ASSESSMENT AND GRADING	To ensure the provision of a sound and fair assessment and grading, please review the **Undergraduate Academic Regulations**.
GRADE APPEAL	Students who wish to appeal their grades should review the **Undergraduate Academic Regulations**.
CLASSROOM POLICIES	Students are expected to dress professionally during class time as required by the University. Use of phones or any other electronic devices in the classroom during class time is strictly prohibited. Unauthorized use may lead to faculty member confiscation of the device for the remainder of the class. Behavior that persistently or grossly interferes with classroom activities is considered disruptive behavior and may be subject to disciplinary action. A student responsible for disruptive behavior may be required to leave the class.
LATE AND MAKE-UP WORK	Students are required to meet the course objectives by submitting coursework no later than the assigned due date. Students may be allowed to submit late work if approved by the course coordinator. Assignments submitted after the due date may be penalized.
MISSED EVALUATIONS	All quizzes, tests, clinical evaluations, and exams must be completed by the date they are assigned. If a quiz, test, or exam is missed due to a documented emergency situation (e.g.,

	medical emergency, death in the immediate family), it is the student's responsibility to contact the instructor.
OTHER	

Course Outline Appendix

A. PROGRAM LEARNING OUTCOMES

1. Be able to, name and write molecular formulas of simple coordination compounds and distinguish between their isomers.
2. Discuss the factors that determines the coordination numbers of complexes and identify and draw the common geometries.
3. Interpret magnetic susceptibility data of coordination complexes.
4. Apply crystal field theory, molecular orbital theory to explains the properties of coordination complexes.
5. Know of some applications of coordination chemistry in our lives.

B. SQU GRADUATE ATTRIBUTES (UNDERGRADUATE)

1. Cognitive Capabilities
2. Skill and Professional Capability
3. Effective Communication
4. Autonomy and Leadership
5. Responsibility and Commitment
6. Development and Innovation

C. OQF CHARACTERISTICS

1. Knowledge
2. Skills
3. Communication, Numeracy, and Information and Communication Technology Skills.
4. Autonomy and Responsibility
5. Employability and Values
6. Learning to learn