Course Specification

University/Academy: Damanhour University

Faculty/Institute: Faculty of Science

Department: Chemistry

1. Course Data:

Course code:	**Course title:**	**Academic year/level:**
Chem. 323	**Inorganic and physical Chemistry (2)**	3rd year / 1st term 2009/2010
Specialization: **Zoology and Chemistry**	**No. of instructional units:** lecture **4hrs** tutorial **1** practical **-**	

course Aim	• This course is aimed to give a solid foundation in the areas of inorganic and physical chemistry. It provides the students with a thorough understanding of the chemistry of d- and f-block elements and covers the basic concepts in coordination chemistry. It also provides a broad background of molecular kinetic theory of gases.

2. Intended learning outcome

Knowledge and understanding	At the end of this course the students will be able to: a1: show the main aspects of the chemistry of Transition elements (d- block and lanthanides). a2: draw the key features of coordination compounds. a3: write the basic knowledge of the Molecular Kinetic Theory of gases.
Intellectual skills	• By the end of the course, students should be able to: • b1: use knowledge and understanding of essential facts,

	concepts, principles and theories relating to course problems. • b2: Analyze novel problems and make Strategies for their solution
Professional skills	• At the end of this course students will have the ability to: • c1 : perform problems related to the course content.
a) General skills	• At the end of this course students will have the ability to: • d1: communicate in group, • d2: formulate information and communication technology.
course content	• Chemistry of Transition element and coordination Chemistry • Introduction to transition metal chemistry,Physical and Formation of metal complexes Physical and Formation of metal complexes (Electronic structure of transition metalschemical properties, Variable oxidation state, Colour and magnetic properties • -Formation of interstitial and non stoichiometric compounds, Occurrence, extraction and uses)Theories of bonding in metal complexes The valence bond theory, • -The electrostatic crystal field theory The molecular orbital theory • Electronic spectra of transition metal complexes • -Thermodynamic stability of metal complexes • Molecular kinetic theory of gases • - Introduction, • Translational kinetic energy and temperature

	• - Principle of equipartition of energy Degrees of freedom and heat capacities of gases.. • -Distribution of molecular velocities Root mean square velocity , average velocity , and most probable velocities • Frequency of collision. Mean free path • Collision diameters. • Viscosity of gases • Thermal conductivity of gases. • Diffusion. Behaviour of real gases. • Compressibility and its uses • Principle of continuity of state • Principle of corresponding state
Teaching and learning methods	• Lecture • Contact hours • Problem-Based Learning • Encourage students to use online and library resources
Taching and learning methods for students with special needs	• Computer hall to be used in visual labs and simulation experiments. • Data show, overhead projector, Molecular models and chemistry computer programs. • Changing to credit hours system, it is more effective.
Student Assessment	• Final-Term Examination to assess the student skill in presenting facts, applications, theories and calculations.
Procedures used:	•
Schedule:	• Assessment 1: Final-Term Examination Week16

Weighing of Assessment:	• Mid-Term Examination: - • Final-Term Examination: 200 • Oral Examination: - • Practical Examination: - • Semester Work: - • Total: 200
List of Textbooks and References:	• J. D. Lee, Concise Inorganic Chemistry,4th ed., Chapman and Hall, London, New York, (1991). • J. E. Huheey, E. A. Keiter and R. L. Kieter, Inorganic Chemistry: Principles and Reactivity. 4th ed. Harper Collins College Publishers (1993). • Physical chemistry , Thomas engel and Philip Reid New York (2005) • Physical chemistry , Gordon . Barrdu Yew York (1998)
Course Notes	• Lecture notes of physical chemistry for 3rd year students - faculty of science – Damanhour - Alexandria University.
Required Books (Textbooks)	• F. A. Cotton and G. Wilkinson, Advanced Inorganic Chemistry, 5th ed, Wiley, Chichester (1988). • Physical chemistry Horia Metiu , Statistical mechanic New York (2004)
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Periodicals, web	www.science.uwaterloo.ca/~cchieh/cact/

sites,…,etc	applychem/coordcpd.html http://chemistry.semo.edu/crawford/ch186/ lectures/ch20/index.html

Course Instructor

Dr. Alaa El-Deen Ali

Date: **20 / 9 / 2008**

Head of Department

Dr. Medhat A. Shaker