



## Course specification

University/Academy: Damanhour University

Faculty/Institute: Faculty of Science

Department: Chemistry

1. Course Data:		
Course code: Chem. 356	Course title: <b>Analytical and physical chemistry</b>	Academic year/level: 2009-2010\3 <sup>rd</sup> year second term
Specialization: <b>Special zoology</b>	No. of instructional units: lecture <input type="text" value="2"/> tutorial <input type="text" value="1"/> practical <input type="text" value="3"/>	

<b>course Aim</b>	<ul style="list-style-type: none"><li>This course Provide a solid foundation in the areas of Analytical chemistry, chemical kinetics and colloidal state of matter.</li></ul>
<b>2. Intended learning outcome</b>	
<b>Knowledge and understanding</b>	At the end of this course the student should know and understand the following: a1- identify Analytical chemistry a2- define chemical kinetics a3-illustrate colloidal state of matter.
<b>Intellectual skills</b>	At the end of this course the students should be able to. b1- analyze essential facts, concepts, principles and theories relating to course problems.
<b>Professional skills</b>	At the end of this course the students should be able to: c1- examine Separation techniques to extract solvent c2- conduct novel problems and plan strategies for their solution. c3- discrete scientific material both orally and in writing in a scholarly manner.
<b>a) General skills</b>	At the end of this course the student should be able to: d1: Communication skills, covering both written and oral communication.



	d2- respond skills needed for continuing professional development.																
course content	<table border="1"> <tr> <td rowspan="5">chemical kinetics and colloidal state of matter</td> <td>Rate of reaction. - Zero, 1st, 2nd, 3rd, -Determination of reaction order. - Effect of temperature on reaction rate.</td> </tr> <tr> <td>-Absolute reaction rate theory. -Catalysis by enzymes -The colloidal state</td> </tr> <tr> <td>-Classification, preparation and purification of colloidal systems -Colligative properties of colloidal systems -optical properties of colloidal systems</td> </tr> <tr> <td>-kinetic properties of colloidal systems -electrical properties of colloidal systems -The electrokinetic Phenomena</td> </tr> <tr> <td>Stability and instability of the colloidal systems</td> </tr> <tr> <td rowspan="8">inorganic chemistry</td> <td>Separation techniques -solvent extraction</td> </tr> <tr> <td>-chromatography -electrophoresis</td> </tr> <tr> <td>Electroanalytical analysis (potentiometry).</td> </tr> <tr> <td>Spectrophotometric analysis (UV., Vis.).</td> </tr> <tr> <td>-Atomic absorption. -electrophoresis -Electroanalytical analysis.</td> </tr> <tr> <td>Potentiometry, conductivity</td> </tr> <tr> <td>voltametry</td> </tr> <tr> <td>polarography</td> </tr> <tr> <td>electrogravimetry -coulometry</td> </tr> </table>	chemical kinetics and colloidal state of matter	Rate of reaction. - Zero, 1st, 2nd, 3rd, -Determination of reaction order. - Effect of temperature on reaction rate.	-Absolute reaction rate theory. -Catalysis by enzymes -The colloidal state	-Classification, preparation and purification of colloidal systems -Colligative properties of colloidal systems -optical properties of colloidal systems	-kinetic properties of colloidal systems -electrical properties of colloidal systems -The electrokinetic Phenomena	Stability and instability of the colloidal systems	inorganic chemistry	Separation techniques -solvent extraction	-chromatography -electrophoresis	Electroanalytical analysis (potentiometry).	Spectrophotometric analysis (UV., Vis.).	-Atomic absorption. -electrophoresis -Electroanalytical analysis.	Potentiometry, conductivity	voltametry	polarography	electrogravimetry -coulometry
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Teaching and learning methods	<p>4.1. Lecture</p> <p>4.2. Contact hours</p> <p>5.3. Problem-Based Learning</p> <p>4.4. Encourage students to use online and library resources</p>																
Taching and learning methods for students with	<p>a. Computer hall to be used in visual labs and simulation experiments.</p> <p>b. Data show, overhead projector, Molecular models and chemistry computer programs.</p>																



<b>special needs</b>	c. Changing to credit hours system, it is more effective.
<b>Student Assessment</b>	Final-Term Examination to assess the student skill in presenting facts, applications, theories and calculations. Class activities (reports, discussions, practical...etc) to assess the student intellectual, professional and practical, and general and transferable skills.
<b>Procedures used:</b>	
<b>Schedule:</b>	Assessment 1 Practical Examination Week 12 Assessment 1 Final-Term Examination Week16
<b>Weighing of Assessment:</b>	<b>Weighing of Assessments</b> Mid-Term Examination: 10 Final-Term Examination: 100 Practical Examination: 30 Semester Work: 10 <hr/> Total: 150
<b>List of Textbooks and References:</b>	<ul style="list-style-type: none"><li>• J. D. Lee, Concise Inorganic Chemistry, 4<sup>th</sup> ed., Chapman and Hall, London, New York, (1991).</li><li>• J. E. Huheey, E. A. Keiter and R. L. Keiter, Inorganic Chemistry: Principles and Reactivity. 4<sup>th</sup> ed. Harper Collins College Publishers (1993)</li><li>• Keith J. Laidler 3<sup>rd</sup>, Harper and row, publisher, New York (1987)</li></ul>
<b>Course Notes</b>	Lecture notes of physical chemistry for 3 <sup>th</sup> year students - faculty of science – Damanhour University.
<b>Required Books (Textbooks)</b>	<ul style="list-style-type: none"><li>• J. D. Lee, Concise Inorganic Chemistry, 4<sup>th</sup> ed., Chapman and Hall, London, New York, (1991).</li><li>• J. E. Huheey, E. A. Keiter and R. L. Keiter, Inorganic Chemistry: Principles and Reactivity. 4<sup>th</sup> ed. Harper Collins College Publishers (1993)</li></ul>



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<b>Recommended Books</b>	F. A. Cotton and G. Wilkenson, Advanced Inorganic Chemistry, 5 <sup>th</sup> ed.
<b>Periodicals, web sites,...,etc</b>	Periodicals, Web Sites, . . . etc <a href="http://www.Elsevier.com">www.Elsevier.com</a>

**Course Instructor**

Dr. Alaa E. Ali

*Date:* 20 / 9 / 2009

**Head of Department**

Dr. Medhat A. Shaker