

Course specifications

Programme(s) on which the course is given: M.Sc. Chemistry

Major or minor element of programmes: Major

Department offering the programme: chemistry

Department offering the course: chemistry

Academic year / Level:

Date of specification approval:

A- Basic Information

Title: Advanced thermodynamics

Code: CH 611

Credit Hours: 2 **Lecture:** 2

Tutorial: 2 **Practical:** - **Total:** 2

Teaching staff: Prof. Dr. / Salem Hamza

B- Professional Information

1 – Overall aims of course

Understanding the basic concepts of chemical kinetics and differentiate between the various types of reactions and their applications in different fields of chemistry.

2 – Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

After completing the course the student should be able to

a1- define thermodynamically controlled reactions.

a2- understand relation between thermodynamics and statistical mechanics

a3- apply laws of thermodynamic to some chemical problems.

b- Intellectual skills

b1- Solving problems related to some thermochemical problems

b2- Determining thermodynamically controlled reaction

c- Professional and practical skills

c1- Solving many problems for understanding the applications of different laws

General and transferable skills

d1- improvement of the students skills especially in thinking,

d2- Mutual discussion and oral presentation.

3- Contents

Topic	No. of hours	Lecture	Tutorial/ Practical
Equilibrium thermodynamics applied to materials, and more general chemical and biological systems,	4	2	
Introduction to statistical thermodynamics.	4	2	
Chemical reactions, equations of state, phase equilibria and stability in multicomponent systems.	6	3	
Thermodynamics of electrolytes, aqueous solutions and electrochemistry.	6	3	
Thermodynamically controlled reactions	4	2	

4- Teaching and learning methods

4.1- Lectures

4.2- Experiments

5- Student assessment methods

5.1- Short exam to assess the understanding

5.2 - Mid term to assess the Mid term performance

5.3 – Final term to assess the final term performance

Assessment schedule

Assessment 1 short exam	week every two weeks
Assessment 2 mid-term exam	week 7 th week
Assessment 3 Final term	week 14 th week

Weighting of assessments

Mid-Term Examination (written + practical)	20 %
Final-term Examination (written + practical)	60 %
Oral Examination.	
Semester Work (written + practical)	20 %
Other types of assessment	
Total	100%

6- List of references

6.1- book

6.2- text books of physical chemistry

7- Facilities required for teaching and learning

Data show

Course coordinator: Dr. / Ayman Shilb

Head of Department: Prof. Dr. / Ahmed Abdelmeged

Date: / /

University: Menoufia

Faculty: Faculty of Science

Course specifications:

Program (s) on which the course is given : M. Sc. Chemistry
Major or minor element of program : Major
Department offering the program : Chemistry
Department offering the course : Chemistry
Academic year / level: 400
Date of specification approval :

A- Basic Information

Title : Surface Chemistry Code : -----
Credit Hours: 2 Lecture : 2
Tutorial : 0 Practical : 0 Total: 2

B- Professional Information

1- Overall aims of course:

Addition of new knowledge and understanding about the science of advanced surface chemistry. The course aims also to make an understanding some of basis of applications of surface science such as emulsions, minerals processing, drinking water treatment, and wastewater treatment.

2- Indented learning out comes of course (ILOs):

a- Knowledge and understanding:

- a1- Adsorption at liquid/liquid, solid liquid, liquid/air interfaces.
- a2- Chemistry of emulsions.
- a3- Chemistry of minerals processing.
- A4- Water treatment.

b- Intellectual skills:

- b1- Importance of studying the surface chemistry.
- b2- Construction of adsorption systems at various interfaces.
- b3- Solving problems may be encountered and related to interfaces applications.

c- Professional and practical skills:

- c1- Building the physical picture of the interface phenomena.
- c2- The ability to apply the gained knowledge at production scale.
- c3- The ability to solve production problems in applications related to surface phenomena.

d- General and transferable skills:

- d1- The ability to interpret the surface and interfacial processes.
- d2- The ability to think in solving the field problems on scientific basis.

3- Course teaching:

Topic	No. of hours	Lecture	Tutorial/practical
Introduction	2	1	Tutorial
Introduction	2	1	Tutorial
Chemistry of emulsions	2	1	Tutorial
Chemistry of emulsions	2	1	Tutorial
Chemistry of flotation	2	1	Tutorial
Chemistry of flotation	2	1	Tutorial
Surfactant in minerals processing	2	1	Tutorial
Surfactants in minerals processing	2	1	Tutorial
Drinking water treatment	2	1	Tutorial
Drinking water treatment	2	1	Tutorial
Wastewater treatment	2	1	Tutorial
Wastewater treatment	2	1	Tutorial
Seminars on selected topics	2	1	Tutorial
Seminars on selected topics	2	1	Tutorial

4- Teaching and learning methods:

4.1- Lectures

5- Student assessment methods:

5.1- Attendance

5.2- Class discussions

5.3- Mid term exam

5.4- Final term exam

Assessment schedule:

Assessment 1: Class discussions

Week: on class time

Assessment 2: Attendance

Week: on class time

Assessment 3: Mid term exam

Week: week no. 6

Assessment 4: Final term exam

Week: upon administration

Weighting of assessments:

Mid- term examination 20%

Final-term examination 60%

Oral examination 10%

Attendance 10%

Total 100%

6- List of references

6.1- Course notes:

Various sections of text books.

6.2- Recommended books

1- Drew Myers, Surfactant Science and Technology, VCH, 1988.

3- A. Fridrikhsberg, A Course in Colloid Chemistry, Mir Publishers, Moscow, 1986.

4- Robert J. Hunter, Foundations of Colloid Science, 2nd Edition, 2001.

5- Duncan J. Shaw , Introduction of Colloid and Surface Chemistry, 4th Edition, 1966.

6- R.H. Ottewill, C.H. Rochester and A.L. Smith, Adsorption from Solutions, 1983.

6.3- Periodicals, Web sites,....etc

J. Separation & Purification Technology

J. Hazardous Materials

J. Hydrometallurgy

J. Colloids & Surfaces

J. Minerals Engineering

J. Adsorption Science & Technology

7- Facilities required for teaching and learning

Data show

Course coordinator: Nobody

Head of department:

Date : 25 / 5 / 2007