جامعة المجمعة
Majmaah University

Course Specifications

Institution:	Majmaah University.
Academic Department :	Chemistry Department.
Programme :	Chemistry.
Course :	Thermodynamic chemistry
Course Coordinator :	Manal Mohamed Salem.
Programme Coordinator :	Gehan Alaemary
Course Specification Approved Date :	19/ 12 / 1435 H

This form compatible with NCAAA 2013 Edition

A. Course Identification and General Information

1. 1 - Course title : Thermodynamic Chemistry	Course Code: Chem312.
2. Credit hours :	(3 ☐ ☐☐
3 - Program(s) in which the course is offered:	Chemistry.
4 – Course Language :	Arabic Language
2. 5 - Name of faculty member responsible for the course:	Manal Mohamed Salem
3. 6 - Level/year at which this course is offered :	level **(5)**
7 - Pre-requisites for this course (if any) :	differentiation and integration- general chemistry (1) physical
8 - Co-requisites for this course (if any) :	Experiments Thermodynamic chemistry
9 - Location if not on main campus :	College of Education - Zulfi☐

10 - Mode of Instruction (mark all that apply)☐

A - Traditional classroom☐	√☐	What percentage?	**20 %**☐
B - Blended (traditional and online)☐	☐	What percentage?	☐
D - e-learning☐	√☐	What percentage?	**80 %**☐
E - Correspondence☐	☐	What percentage?	☐
F - Other	☐	What percentage?	☐

Comments :
☐

B Objectives

What is the main purpose for this course?

- Knowledge of the basics of thermodynamics
- explain applications of thermodynamics of chemical and physical processes.
- Remembering the first law of thermodynamics.
- Apply base signal on work and amount of heat.
- Remembering the texts of the second law of thermodynamics.
- explaining Carnot cycle.
- conclusion some basic relationships.

. understanding and knowledge of the texts of the third law of thermodynamics.

- the application of laws and mathematical relationships in resolving many of the issues

• analyzes the and explain some of the phenomena of nature .
Briefly describe any plans for developing and improving the course that are being implemented : • Adoption of the students themselves in the study, and borrow references from the library • The use of effective teaching methods and modern. • Change the content and updated

C. Course Description

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
- Introduction to Thermodynamics - The system and properties of system and types of system - the first law of thermodynamics - heat content , types and its applications	3	6
- Heat capacity , its types - the relationship between C_v and C_p	1	2
- joule Thompson and its problems – - second law of thermo dynamics – - Carnot cycle and Carnot efficiency of the machine - and problems	3	6
- Operative Clauzs Klvin - entropy and change of entropy for reverse processes - problems	4	8
- The third law of thermodynamics and absolute entropy free energy under the influence of pressure and a temperature	2	4
- Gibbó́s equation -problems	1	2

2. Course components (total contact hours and credits per semester):

☐	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	14	.....☐	28	☐	.....☐	42hr.☐
Credit	.....☐	.....☐	.....☐	.....☐	.....☐	.....

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3. Additional private study/learning hours expected for students per week.

4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	**Knowledge**		
1.1	By the end of this course the students will be able to: recognize the basics of thermodynamics (such as System- types) • Remember system properties • Remember the texts of the laws of thermodynamics (I-II-III). • remember the differences between reversible and irreversible processes • apply mathematical relationships in solving exercises . • concludes some mathematical relationships using the first derivative . The link between Theoretical and practical experiences	- Lectures - Discussion - Experiments - Researches	-Work activities -Field exercises -Periodic tests -Final tests
1.2			
1.3			
1.4			
1.5			
1.6			
1.7			
1.8	Introduction of students to be catalysts follow the mechanical interactions		
1.9	Introduce students to connect between the theoretical and practical lessons by conducting laboratory experiments		
1.10	Definitions of surface phenomena important such as surface tension.		
2.0	**Cognitive Skills**		
2.1	By the end of the course students should be able to: The ability of the existence of solutions to unexpected problems in creative ways.	-Lectures -Discussion -Experiments -Researches	- Participate in the hall - Research in the content. - solve problems - collective and individual duties. - midterm and final exams
2.2	The ability to use laboratory tools accurately.		
2.3	The ability to critical and analytical thinking.		
2.4	The ability to analyze the concepts and basics and principles.		
2.5	trying to figure out the problems contained testing process and how to solve it.		

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
2.6	Apply the skills acquired in the academic and professional contexts related to the science of chemistry.		
3.0	**Interpersonal Skills & Responsibility**		
3.1	By the end of the course students should be able to: Cooperative work in the laboratory.	-Homework to develop the skills of self-study. -The practical studies as groups. -The work of - Intramural Research -Internet search -PowerPoint Offers.	Follow up experiments in the laboratory , Effective participation within the hall - Assessment research and Review the Collective duties. - The ability to self-Study in the form of homework. Follow up experiments in the laboratory .
3.2	Conduct research work as a team.		
3.3	Effective participation in the activities of the methodology.		
3.4	The ability to self-reliance when learning.		
3.5	Assume responsibility and individual responsibility towards society		
3.6	Take individual responsibility and responsibility towards the community with a commitment to the values and ethics that are compatible with Islamic values		
4.0	**Communication, Information Technology, Numerical**		
4.1	By the end of the course students should be able Use of modern communication technologies and information.	Solving problems. Use of the Computer The use of a calculator. Discussion and dialogue	Discussion Monthly tests And Theoretical tests.
4.2	Discussion and dialogue during lectures.		
4.3	Application of mathematical and statistical methods when solving problems**.**		
4.4	**.....**		
4.5	**.....**		.....
4.6	**.....**	.....	.....
5.0	**Psychomotor**		
5.1	By the end of the course students should be able to: Use of laboratory tools properly and accurately.	The use of telecommunications and information technology(ICT) Training in the laboratory.	An oral and practical tests.
5.2	Use of computers in power point Offers		
5.3	The student mastered the use of security tools and safety laboratory.		
5.4	**.....**	.....	.....
5.5	**.....**	.....	.....
5.6	**.....**	.....	.....

5. Schedule of Assessment Tasks for Students During the Semester:

	Assessment task	Week Due	Proportion of Total Assessment
1	Participation activities students methodological Of scientific research – Entries…	Weekly	10%
2	Med- term exam.	Sixth week	20%
3	Med- term exam(practical)	Eighth week	10%
4	Final test (practical)	Fourteenth week	20%
5	Final test (theoretical)	eighteenth Week	40%
6	.....	.....	.....
7	.....	.....	.....
8	.....	.....	.....

D. Student Academic Counseling and Support

-Benefit from the counseling hours
- Communicate with students

E. Learning Resources

1. List Required Textbooks :

1 "chemical thermodynamics", Prof. Suleiman Hammad Khwaiter, Prof.. Abdul Aziz Abdullah Alsuhaibani, Dar Khuraiji for publication and distribution, the first edition 1419/1998.

2 "Physical Chemistry in kinetic chemistry and thermodynamic" O.d.abd Aleem Sulaiman Aboualemjd, Dar Arab 2001.

3 Experiments in Physical Chemistry (chemical thermodynamics) Prof. Ahmed Abdel-Aziz Ays- first edition, Obeikan Bookstore 1415 / 1995

4."Physical Chemistry"2Ed.Gilbert W. Castellan Addison Wesley Publishing company 1971.

4.Physical Chemistry Walten J.Moor 5nd Ed. 1990 Burnt Mell, Harlow, England.

2. List Essential References Materials :

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1 "chemical thermodynamics", Prof. Suleiman Hammad Khwaiter, Prof.. Abdul Aziz Abdullah Alsuhaibani, Dar Khuraiji for publication and distribution, the first edition

1419/1998.
2 "Physical Chemistry in kinetic chemistry and thermodynamic" O.d.abd Aleem Sulaiman Aboualemjd, Dar Arab 2001.
3 Experiments in Physical Chemistry (chemical thermodynamics) Prof. Ahmed Abdel-Aziz Ays- first edition, Obeikan Bookstore 1415 / 1995

List Recommended Textbooks and Reference Material :

1-Chemical Thermodynamics, Prof.. Abdul Aziz S. Fouda K..Kh. Naimi, House of Culture Doha-Qatar, the first edition 1412/1992.

2.Text book of physical chemistry, Samuel Glasstone.

3.L.I.Antropove, "Theoretical Electrochemistry" Mir Publishers in Moscow, English Translation mir Publishers 1977".

4.Pitzer,K.S.,"Thermodynamics" McGraw Hill, New York, USA, 1995.

5.Rastogi, R.P.and R.P. Mistra," An Introduction to Chemical Thermodynamics", First edition ,Vikas Publishing House Pvt. Ltd., New Delhi, 1978.

6.Sonntag,R.E. and C.Borgnakke, "Fundamentals" Wiley-Liss Inc.,USA,1997.

4. List Electronic Materials :

www. Science-direct.com.

5. Other learning material :

- .....
- .....
- .....

F. Facilities Required

1. Accommodation

Lecture room is excellent,
Lecture room contains Platform , smart board, 40 seats,
and curtains in good condition.

2. Computing resources

- Personal.

3. Other resources

Availability of equipment relevant to the course material .

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching:

- Analysis of the results of students in decision .
- Questionnaire a faculty member for the students at the end of the semester.
- Ask a questionnaire that content course for students in the end of the semester .
- Exam Midterm .
- Assess vocabulary scheduled by analyzing workmanship skills among students.

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2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor :

- Peer consultation on teaching ,
- discuss research students with some of the members of the section ,
- Invite specialists and their discussion.

3 Processes for Improvement of Teaching :

- Review of teaching strategies recommended.
- Diversity teaching methods and activating the use of modern technologies
- The formation of the scientific in section of qualified and experienced
- Provide learning resources, especially the library and the Internet.
- Motivate and encourage students to actively participate in the research and experimentation
- Participate effectively in the training courses for the development of the capacities of Professor.
- Training and continuous development
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4. Processes for Verifying Standards of Student Achievement

- check marking by a faculty member of the department for a sample of students
- check marking by an independent faculty member.

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement :

- Develop appropriate vocabulary and keep pace with changing times
- Reviewing Course Description
- Follow-up in the new effective teaching strategies
- benefit from the development of university courses and activated in educational performance
- Hold workshops to view the results.

Course Specification Approved

Department Official Meeting No (…..) Date … / …. / ….. *H*

Course's Coordinator		Department Head	
Name :	Manal Moh. salem	***Name :***	Gehan Alomayri
Signature :	M.Salem	***Signature :***	.....
Date :	19/ 12 / …… *H*	***Date :***	…./ … / …… *H*