



Postgraduate Course Book

Department: Chemistry

College: Education College

University: Salahaddin University

Subject: Industrial Chemistry and polymers

Course Book Level: Diploma; second semester

Lecturer's name: Dr. Dler Kurda

Academic Year: 2023/2024

Course Book

1. Course name	Research Methodology
2. Lecturer in charge	Dr. Dler Kurda
3. Department/ College	Chemistry
4. Contact	e-mail: dlер.kurda@su.edu.krd
5. Time (in hours) per week	Theory: 2hrs
6. Office hours	Saturday 8 am – 11am
7. Course code	
8. Teacher's academic profile	<p>Full Name: Dler Dlshad Kurda Rawanduze</p> <p>Date of Birth: 15/3/1976</p> <p>I became one of the academic staff at the University of Salahaddin about 23 years ago and graduated from the Faculty of Science Department of Chemistry in the 1996-1997 academic year. Then I was appointed as a University Teaching assistant in 1999 and was accepted in the 2001 M.Sc studies, and got a master's degree in 2003 in the specialty of Industrial organic chemistry ...</p> <p>In 2009-2010 I accepted a Ph.D. and got a Ph.D. in polymer specialization in 2014 ...</p> <p>On 4/9/2023, I was promoted from Lecturer to assistant professor in Induintostrial Organic Chemistry - Polymer Synthesis</p> <p>In 2020-2023 Head of Chemistry Department</p> <p>From the 2023 till now the Director of the Higher Education and Scientific Affairs unit</p> <p>Participated in many scientific seminars, Symposium, and cultural and sports gatherings</p>
9. Keywords	Industrial Chemistry definitions, Safety consideration, Surfactants, polymer and macromolecules, Addition and Condensation polymerization

This course is designed to:

- Focus on the design of reactors in Industrial factory.
- Safety consideration.
- Introduce to different industrial products.
- Explain the main properties of industrial products.

11. Course objective:

To provide students with a thorough grounding in principles and sound knowledge of scientific methods of the chemical sciences.

Arouse a sense of curiosity and enquiring mind, in order to encourage and develop creative thinking and research aptitudes.

Generate in students an awareness of the enormous resources in their immediate environment so as to enhance solutions to the challenges of our time in a march towards nation building.

Inculcate in students appropriate skills and abilities to manage and administer technological operations within the field of chemistry and allied areas;

To educate, train and produce chemists, who are technically innovative and self-reliant, having a meaningful picture of the chemical industry.

Prepare students for professional participation in chemical industries.

12. Student's obligation

The student attendance in class two hours a week + Seminar+ preparation of the home works using computer

13. Forms of teaching

Different forms of teaching will be used to reach the objectives of the course: Seminar, Direct questions, Quizzes, Discussion and conclusions. Power point presentations

14. Assessment scheme

Weekly quizzes during the course (5pts). Participation in class and activities (5pts) midterm (20pts)+ review article(15)+ Seminar(5) & Final 50%.

15. Student learning outcome:

At the completion of this course, students should be able to:

- Understand the basic concepts and laws of the three modes of heat transfer;
- Understand and use empirical equations to solve forced and natural convection heat-transfer problems;
- Solve simple radiation heat transfer problems;
- Analyse the heat transfer processes involved in boiling and condensation;
- Design common heat exchangers like double pipe and shell & tube to determine relevant design parameters
- Identify and understand the unit operations involved in a process
- Solve materials and energy balances alone and simultaneously on chemical process systems

<p>16. Course Reading List and References: Ribes, Carolyn. "Strategies for Success as an Industrial Chemist." <i>Chemistry International</i> 43, no. 3 (July 1, 2021): 4–7. http://dx.doi.org/10.1515/ci-2021-0302. Marmor, Solomon. "Industrial chemistry bibliography." <i>Journal of Chemical Education</i> 62, no. 4 (April 1985): 331. http://dx.doi.org/10.1021/ed062p331. Billmeyer, F, <i>Textbook of Polymer Science</i>, 2nd ed., John Wiley and Sons, Inc., NY (1971). Braun, D, <i>Simple Methods for Identification of Plastics</i>, Macmillan</p>	
17. Topics Program	Lecture's Name
Week 1: Industrial Chemistry Definition, relationship with other science	
Week 2: Industrial process design, Continuous and Batch Process	
Week 3: Physical and Chemical processes, safety consideration	
Week 4: Catalysis	
Week 5: Environmental Chemistry and Environmental pollution	
Week 6: Development and Discovery	
Week 7: Quality control and Quality Assurance	
Week 8: Validation process	
Week 9: Surfactants	
Week 10: Chemistry of colorants.	
Week 11: Polymer and polymerization	
Week 12: Addition Polymerization	
Week 13: condensation polymerization	
Week 14: Nomenclature of polymer	

<p>18. Grading procedure Seminar+ Reports+ Quizes+ Midterm exam...+ Final</p>	
<p>19. Examinations:</p> <p>What is the Difference between Thermoset and Thermoplastic?</p> <p>Thermosetting plastics and thermoplastics are both polymers, but they behave differently when exposed to heat. Thermoplastics can melt under heat after curing while thermoset plastics retain their form and stay solid under heat once cured.</p> <p>Because thermoplastics have a low melting point, they are ideal for applications that use recycled materials. Thermoset plastics, in contrast, are able to withstand high temperatures without losing their shape, making them more durable.</p> <p>Aesthetically, thermoplastics are seen as superior to thermoset polymers, however thermosetting materials are still deemed to have better aesthetics than alternatives such as metals. These materials allow for in-mould painting or coating, including spraying coatings directly into the mould before the thermoset polymers are injected into it. This technique offers better adhesion to the material and prevents chipping, cracking or flaking, even under harsh weather conditions..</p>	

20. Extra notes:

The student must follow attendance policy that given by the university.

- The student is responsible to read all announcements that are regularly posted by the instructor.
- Any student having difficulty understanding this handout should contact the instructor for clarifications.
- For all enquiries, students should contact the instructor.

21. Peer review *

* Must have permission of the Scientific and Higher Education Committee