

Course Book

1. Course name	Research Methodology
2. Lecturer in charge	Dr. Dler Kurda
3. Department/ College	Chemistry
4. Contact	e-mail: dlr.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 Induintoustrial 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	polymer Chemistry, Classification , techniques of polymerization, polymer and macromolecules, Addition and Condensation polymerization

This course is designed to:

- Focus on polymer and macromolecules.
- Classification of polymers.
- Addition and Condensation Polymerization.

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 (13pts)+ practical 37 and Final 50%.

15. Student learning outcome:

use essential descriptions about polymer chemistry. Defines related concepts. Summarizes historical evolution of the polymers. Recognizes monomers and polymers. evaluate the structure of polymers. Recognizes bonds between polymer chains. Interprets stereochemistry of polymers. Debates thermal characters and affecting factors of thermal behavior. Explains intermolecular orders at polymers. Solves the problems about polymer chemistry. Uses determining methods of molecular weight. Categorizes polymers. Categorizes polymerization reactions with respect to mechanisms and distinguishes differences of these reactions. Explains polymer production processes.

16. Course Reading List and References:

Billmeyer, F, Textbook of Polymer Science, 2nd ed., John Wiley and Sons, Inc., NY (1971). Braun, D, Simple Methods for Identification of Plastics, Macmillan

17. Topics Program	Lecture's Name
Week 1: Polymer Definition	
Week 2: Macromolecules and organic molecules	
Week 3: classification of polymers	
Week 4: crosslinked polymers	
Week 5: mechanism of polymerization process	
Week 6: Addition polymerization	
Week 7: Condensation polymerization	
Week 8: monomers, initiators, inhibitors	
Week 9: midterm exam	
Week 10: coordination polymerizations	
Week 11: copolymers	
Week 12: tacticity of polymerization	
Week 13: mechanism of radical polymerization	
Week 14: mechanism of ionic polymerization	
18. Grading procedure Reports+ Quizes+ Midterm exam...+ Final	

19. Examinations:

Which of the followings is natural polymer?

- a- Starch
- b- Cellulose
- c- Cellulose acetate
- d- A and b

What is the difference between thermoplastic and thermosetting polymers?

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.

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..

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