

School of Chemistry
University of the Punjab, Lahore
Course Outline

Programme	BS Chemistry	Course Code	NSW-106	Credit Hours	3
Course Title	Science Wonders Around Us (NS)				
Course Introduction					
<p>This comprehensive course introduces the fundamentals of science, covering its history and various branches. This course will cover the chemical and biochemical aspects of everyday materials and processes, green chemistry, and the chemistry of common-use products. The course also examines energy resources, modern materials like ceramics, plastics, semiconductors, and nanomaterials, as well as the chemistry of food, biofuels, organic farming, and the environment. This course bridges knowledge gaps among students of different scientific areas, providing a well-rounded understanding of science in daily life.</p>					
Learning Outcomes					
<p>On the completion of the course, the students will: Understand the basics of chemistry in daily life. Learn the fundamentals of biochemicals. Explore the interdisciplinary nature of material and processes in everyday life. By taking this course, the student will be more accomplished and informative.</p>					
Course Content¹					Assignments/Readings
Week 1	Introduction to Science, History and branches of Science, Chemical and physical properties of the materials (i.e., solid, liquid, gases), chemical bonding, types of chemical reaction				
	Introduction to thermodynamics and kinetics of the chemical reactions, radiation, and spectrum.				
Week 2	Green chemistry. Chemistry of detergents, shampoo, vanishing cream, etc				
	Continue.....				
Week 3	Energy resources (renewable and non-renewable). Modern materials/chemicals, ceramics, plastics, semiconductors/nanomaterials, cosmetics, etc.				
	Continue.....				
Week 4	Continue.....				
	Continue.....				
Week 5	Food. Biofuels (biomasses)				
	fertilizers/organic farming				
Week 6	Environmental pollution.				
	Global warming & climate change				
Week 7	Continue.....				

	Water and plants.	
Week 8	Continue.....	
	Quiz	
Week 9	Midterm exam	
	Fermentation, Kitchen chemistry and chemistry of baking.	
Week 10	Biomolecules: structure and function of biomolecules, i.e., proteins, lipids, carbohydrates and enzymes, vitamins.	
	Continue.....	
Week 11	Continue.....	
	Continue.....	
Week 12	Antioxidants. Medicines. Toxicons.	
	Continue.....	
Week 13	Natural hazards and disasters: Earthquake, volcanic eruption, tsunami,	
	Continue.....	
Week 14	Floods, avalanches, drought and salinity,	
	Continue.....	
Week 15	Wildfire, disaster and risk management.	
	Continue.....	
Week 16	Presentation	
	Final term exam	

Textbooks and Reading Material

1. Chang, Raymond. Physical chemistry for the chemical and biological sciences. University Science Books, 2000.
2. Nelson, David L., Albert L. Lehninger, and Michael M. Cox. Lehninger principles of biochemistry. Macmillan, 2008.
3. Environmental Science: Systems and Solutions By Michael L. McKinney, Robert Schoch and Logan Yonavjak, 5th ed. 2013.
4. Keller, Edward A., and Duane E. DeVecchio. Natural hazards: earth's processes as hazards, disasters, and catastrophes. Routledge, 2019.
5. Callister Jr, William D., and David G. Rethwisch. Materials science and engineering: an introduction. John Wiley & Sons, 2020.
6. Eminent Muslim Scientists by Sayed Fakhar-e-Alam Naqvi. Peace Publications. 2017.
7. Everyday Science by Dr. Muhammad Akram Kashmiri. A. H. Publishers. 22 AI-Fazal Market, Urdu Bazar, Lahore
8. Everyday Science by Prof. Dr. Riaz-ul-Haq. Dogar Publishers, 36 Urdu Bazar, Lahore
9. Guide to Science, Isaac Asimov. 1993. <https://clalibrary.blogspot.com/2020/06/asimovs-new-guide-to-science-1993-by.html>

Note:

10. It is preferable to use latest available editions of books. Mention the publisher & year of publication.

11. The References/ bibliography may be in accordance with the typing manual of the concerned faculty/subject. Preferably follow APA 7th Edition publication manual.

Teaching Learning Strategies

1. Class lectures
2. Quiz
3. Assignments
4. presentation

Assignments: Types and Number with Calendar

1. Assignment # 1: Before mid
2. Assignment # 2: Before final

Assessment

Sr. No.	Elements	Weightage	Details
1.	Midterm Assessment	35%	Written Assessment at the mid-point of the semester.
2.	Formative Assessment	25%	Continuous assessment includes: Classroom participation, assignments, presentations, viva voce, attitude and behavior, hands-on-activities, short tests, projects, practical, reflections, readings, quizzes etc.
3.	Final Assessment	40%	Written Examination at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, field work and report writing etc.