.00187

CHEMISTRY MINOR
(For PG Students of Other faculty)

Title: Chemistry in Every Day Life

General Information: **(4 Credit)**

1. Duration of the Course: 6 Months, 2. Eligibility: Regular Student, 3. No. of Students/batch: 100

Course Objective: Our environment is a hugely complex system that includes the air we breathe, the land we live on, the water we drink and the climate around us. As we strive towards a better world, we work to ensure chemistry's contributions are realised. Chemistry can help us to understand, monitor, protect and improve the environment around us. Chemists are developing tools and techniques to make sure that we can see and measure air and water pollution. They have helped to build the evidence that shows how our climate has changed over time. And they can be part of the effort to understand and address new problems that we face like microplastics and the potential effects of the different chemicals that we are exposed to.

So, in view of above context, we have develop such course which can be helpful specially for non-science students of PG level to understand about water, Vitamins, minerals, Chemistry in Agriculture, Plant Protection, Environment, Pollution and polymers.

Units	Topics	No. of Lectures
I	**Water:** Source of water, drinking of water, structure, ice, Structure and properties, Hardness of water, types of hardness, Effect of hard water, Removal of hardness of water.	5
II	**(a) Vitamins and minerals** Need for vitamin in body, types of vitamins, water soluble and fat soluble vitamins, Vitamin B-12, vitamin C (Cyanocobalamine), Vitamin D, and Vitamin K. Role of minerals in body, iodine deficiency and remedy. **(b) Chemistry and Diet** Carbohydrate, Fats and oil, Proteins, Minerals Vitamin, Calories value of foods, Balanced Diet, BMR, BMI	15
III	(a) **Chemistry in Agriculture and Plant Protection** Soil chemistry, Manures, Fertilizers – Phosphate, Nitrogenous, Potassium, Bio magnification, Pesticide- Insecticide, Herbicide, Rodenticide, Molluocicide, control, specific use of pesticide. (b) **Environment and Pollution** Environment, Air, Atmosphere- region, chemical composition, chemical pollutants in environment, climate change and global warming, Motor vehicles and chemical pollution, AQI, photochemical smog, Acid rain, Ozone layer depletion.	20
IV	**Polymers** Polymer, monomer, examples of polymers, classification, polymerization process, condensation, addition polymers, Fibers: natural fibers, cotton, wool, silk, rayon, artificial fibers, polyamides, acrylic acid, PVC, PVA; Examples of natural biodegradable polymers, cellulose, cellulose acetate, synthetic biodegradable polymers. Use of polymeric materials in daily life.	20

Suggested Readings:

1. The Surface Chemistry of Soils by Garrison Sposito, Oxford University Press.
2. Principles and Practice of Soil Science: The Soil as a Natural Resource, 4th Ed. by Robert E. White; Blackwell Publishing.
3. Environmental Chemistry of Soils by Murray B. McBride, Oxford University Press.
4. Fundamentals of Soil Science by Henry D. Foth, 8th Ed., John Wiley & Sons.
5. Encyclopedia of Soil Science by Ward Chesworth, Springer.
6. Food, Energy and Water: The Chemistry connection; Satinder Ahuja, Elsevier.
7. Sustainability and Environmental Impact of Renewable energy Sources, R, M, Harrison, R. E. Hester, Royal Society of Chemistry.
8. Industrial Chemistry for Advanced Students; Mark Anthony Benyenuto; De Gruyter.
9. Agents of War: A History of Chemicals and Biological Weapons; Edward M, Spiers; Reaktion Books.
10. Genetically Modified Athletes: Biomedical Ethics, Gene Doping and sports; Andy Miah; Routledge.

Suggested online links:

http://heecontent.upsdc.gov.in/Home.aspx
https://nptel.ac.in/courses/104/106/104106096/
https://www2.chemistry.msu.edu/faculty/reusch/VirtTxtJml/intro1.htm
https://nptel.ac.in/courses/104/103/104103071/#

Suggested Continuous Evaluation Methods: Students can be evaluated on the basis of score obtained in a mid-term exam, together with the performance of other activities which can include short exams, in-class or on-line tests, home assignments, group discussions or oral presentations, among others . **Or**	
Assessment and presentation of Assignment	(10 marks)
04 tests (Objective): Max marks of each test = 10 (average of all 04 tests)	(10 marks)
Overall performance throughout the semester, Discipline, participation in different activities)	(05 marks)
Max. Marks: 25+75	Min. Passing Marks: 40
Suggested equivalent online courses:	
Further Suggestions:.....	