



Integrated Bachelors & Masters Programmes
B.Sc. Chemistry, Semester II

Course Code	IS02CCHE51	Title of the Course	Chemistry-II
Total Credits of the Course	2	Hours per Week	2 hrs

Course Objectives:	<p>1. To understand and familiarize with the atomic structure, periodic properties, chemical bondings, nomenclature and preparation of some important organic compounds and their reactions metals, alloys, semiconductors and important inorganic materials.</p> <p>2. To familiarize with the specific applications of the organic and inorganic substances.</p>
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Course Content		
Unit	Description	Weightage* (%)
1.	Atomic Structure, Periodic Properties, and Organic Compounds-II (A) Atomic Structure: Orbitals and Quantum number, Shielding Effect and Effective Nuclear Charge. (B) Periodic Properties: Ionization Energy, Electron Affinity, Electronegativity, Chemical bondings. (C) Organic Compounds: Ketones, Aldehydes, Carboxylic acids, Amides, Esters and Nitriles, Trivial/IUPAC nomenclatures, physical properties, preparation, and chemical reactivity as well as specific applications.	50
2.	Metals, alloys, semiconductors and important inorganic materials (A) Metals, alloys and semiconductors: Important metals and their ores, Metallurgy processes, Alloys and their types, preparation, properties and uses, Semiconductors and their applications, doping. (B) Important inorganic materials: Types and classification, general characteristics, and applications of inorganic materials including cements, ceramics, glasses, and carbon materials.	50

Teaching-Learning Methodology	Blends of the demonstrations of laboratory practical and the class room teaching, along with seminar/tutorials/PPT presentations/allotment and evaluation of assignments etc.
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage





1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to

1.	Explain the structure of atoms and molecules, and the properties of atoms and ions
2.	Write IUPAC names of organic compounds covered in this course
3.	Explain the reactivity of organic compounds intended in this course
4.	Synthesize organic compounds included in the course
5.	Write reactions of organic compounds with different reagents taught in the course
6.	Explain the metallurgical processes and preparations of alloys
7.	Understand the application of metals, alloys, semiconductors and inorganic materials

Suggested References:

Sr. No.	References
1.	W. U. Malik, G. D. Tuli, R. D. Madan, Selected Topics in Inorganic Chemistry, S. Chand.
2.	S. Prakash, G. D. Tuli, S. K. Basu, R. D. Madan, Advance inorganic chemistry (Vol. - I).
3.	J. D. Lee, Concise Inorganic Chemistry.
4.	O.P. Khanna, A textbook of material science & metallurgy.
5.	B. K. Sharma, Industrial Chemistry, (9th Edition).
6.	M. M. Uppal, A Textbook of Engineering Chemistry.
7.	C. V. Agarwal, Chemistry of Engineering materials.
8.	Jain & Jain, Chemistry of Engineering materials.





SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar, Gujarat
(Reaccredited with 'A' Grade by NAAC (CGPA 3.25))
Syllabus with effect from the Academic Year 2022-2023

9.	R. T. Morrison, R. N. Boyd, S. K. Bhattacharjee, Organic Chemistry, 7 th edition, Pearson publication, 2011.
10.	J. McMurry, E. Simanek, Fundamentals of organic chemistry, 6 th edition, Thomson Brooks/Cole, 2007.
11.	J. McMurry, Organic Chemistry, 5 th edition, Brooks/Cole, 2000.
12.	T. N. Sorrell, Organic Chemistry, 1 st edition, Viva books, 2004.
13.	B. Mehta, M. Mehta, Organic Chemistry, PHI Learning, 2012.

On-line resources to be used if available as reference material

On-line Resources: <https://swayam.gov.in/>





Integrated Bachelors & Masters Programmes
B.Sc. Applied Chemistry, Semester II

Course Code		Title of the Course	Chemistry Practicals-II
Total Credits of the Course	1	Hours per Week	2 hrs

Course Objectives:	1. To understand and familiarize with basic laboratory skills in inorganic and organic chemistry practical. 2. To learn the methods for estimation of inorganic and organic species/functionalities.
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Course Content		
Unit	Description	Weightage* (%)
1.	(1) Gravimetric analysis (silver). (2) Purity of iron. (3) Purity of copper. (4) Analysis of hardness of water. (5) Measurement of dissolved oxygen in water by iodometry. (6) Estimation of hydroxyl group. (7) Estimation of carboxyl acid group. (8) Estimation of ester group.	100

Teaching-Learning Methodology	Blends of the demonstrations of laboratory practicals and the classroom teaching, along with seminar/tutorials/PPT presentations/allotment and evaluation of assignments etc.
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%





3.	University Examination	70%
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Course Outcomes: Having completed this course, the learner will be able to

1.	Work independently in the laboratory obeying good laboratory practices and safety norms
2.	Estimate purity of inorganic substances
3.	Estimate various functional groups present in organic compounds

Suggested References:

Sr. No.	References
1.	Vogel's Test book of Quantitative Chemical Analysis, 5 th Edition, G.H. Jeffery, J. Basset, J. Mendham, R.C. Denney.
2.	Vogel's Test book Of Qualitative Inorganic Analysis, G. Svehla.
3.	A text book of practical organic chemistry including organic qualitative analysis, A. I. Vogel, 3 rd Edition, Longman publication, 1974.
4.	Comprehensive Practical Organic Chemistry: Preparation and Quantitative Analysis, V.K. Ahluwalia, R. Aggarwal, University Press, 2000.
5.	A textbook on chemistry practical, B. C. Ray, S. Das, New Central Book Agency, 2014.

On-line resources to be used if available as reference material

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