

LESSON PLAN

Department Name: Chemistry

Name of Faculty: Dr. Sharmila Bhattacharya

Course Name: Four-Year B.A./B.Sc Chemistry (Honours and Honours with Research) Course

Semester: 2

Planned				After Implementation	
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
CHEM-H-CC2-2-Th/Module : II	Chemical Bonding-I	1. Lee, J.D. Concise Inorganic Chemistry 2. Sarkar, R.P. General & Inorganic Chemistry	7	Traditional method of teaching	
CHEM-H-CC2-2-P	Iodo/Iodimetric titration, estimation of metal content in some selective samples	Practical Workbook Chemistry(H),UGBOS,University of Calcutta	30	Traditional method of teaching	
CHEM-H-IDC2-2-Th/Module: II	Titrimetric analysis & Tutorial	Douglas A. Skoog, D.M. West , F. James Holler , Stanley R. Crouch, Fundamentals of Analytical Chemistry , Cengage learning India Pvt Ltd. 10 th Edition , 2022	8+4	Traditional method of teaching	
CHEM-H-CC2-2-Th/ CHEM-MD-CC2-Th/Module: II	Chemical bonding-I	1. Lee, J.D. Concise Inorganic Chemistry 2. Sarkar, R.P. General & Inorganic Chemistry	7	Traditional method of teaching	
CHEM-MD-CC2-P	Iodo/Iodimetric titration, estimation of metal content in some selective samples	Practical Workbook Chemistry(H),UGBOS,University of Calcutta	30	Traditional method of teaching	
Course Name:					

Subject Name/Code:

LESSON PLAN

Department Name: Chemistry

Name of Faculty: Dr. Sharmila Bhattacharya

Planned				After Implementation	
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
Three-Year B.A./B.ScChemistry (Honours) under CBCS: Semester: 4				Traditional method of teaching	
CC-4-10-TH/ INORGANIC CHEMISTRY-4	Coordination Chemistry-II	1.Lee,J.D.Concise Inorganic Chemistry 2.Sarkar,R.P.General & Inorganic Chemistry 3.Huheey,J.E.;Keiter,E.A,& Keiter, R.L. InorganicChemistry,Principles of Structure and Reactivity	30	Traditional method of teaching	
SEC-B3: Pharmaceutical Chemistry	Fermentation	1. Singh, H and Kapoor, V.K., Medicinal and pharmaceutical Chemistry	10	Traditional method of teaching	

LESSON PLAN

Department Name: Chemistry

Name of Faculty: Dr. Sharmila Bhattacharya

Three-Year B.A./B.ScChemistry (Honours) under CBCS

Semester: 6

CC-6-13-TH	Bioinorganic Chemistry, Theoretical principles in qualitative analysis	1. Bioinorganic Chemistry, G. N. Mukherjee and A. Das	25+5		
CC-6-13-P	Qualitative Analysis	Vogel's Qualitative Inorganic Analysis	45		
Course Name: Three-Year B.A./B.ScChemistry(general) Course under CBCS Semester: 4					
CC4/GE4-Th	Crystal field theory	1.R.L Dutta	10		

Subject Name/Code:

LESSON PLAN

Department Name: Chemistry

Name of Faculty: Dr. Sharmila Bhattacharya

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Subject Name/Code:

LESSON PLAN

Department Name:

Name of Faculty: Dr. Priyabrata Roy

Paper Name & Code:

Planned					
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
CHEM-H-CC2-2-Th	Stereochemistry – II, General Treatment of Reaction Mechanism-I	1. Finar, I. L. Organic Chemistry (Volume 1), 6th Edition , Pearson Education , 2002 2. Sykes, P. A guidebook to Mechanism in Organic Chemistry, Pearson Education, 2003. 3. Nasipuri, D. Stereochemistry of Organic Compounds, 4th Edition, New Age International Pvt Ltd , 2020	15	Offline method 1. Traditional method through the use of the chalk and board 2. Project-Based Learning 3. Consulting different reference books and photocopy of prepared notes 4. E book	
CHEM-H-CC2-2-Th CHEM-MD-CC2-2-Th	Stereochemistry – II, General Treatment of Reaction Mechanism-I	1. Finar, I. L. Organic Chemistry (Volume 1), 6th Edition , Pearson Education , 2002 2. Sykes, P. A guidebook to Mechanism in Organic Chemistry, Pearson Education, 2003. 3. Nasipuri, D. Stereochemistry of Organic Compounds, 4th Edition, New Age International Pvt Ltd , 2020	15	Offline method 1. Traditional method through the use of the chalk and board 2. Project-Based Learning 3. Consulting different reference books and photocopy of prepared notes 4. E book	

Subject Name/Code:

LESSON PLAN

Department Name:

Name of Faculty: Dr. Priyabrata Roy

Paper Name & Code:

Planned					
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
CHEM-H-SEC2-2-Th	Introduction to Artificial Intelligence, Subfields and technologies, Applications of AI.	1. Russell / Norvig , ARTIFICIAL INTELLIGENCE: A MODERN APPROACH , 4th Edition , Pearson Education, 2022	15	Offline method 1. Traditional method through the use of the chalk and board 2. Project-Based Learning 3. Consulting different reference books and photocopy of prepared notes 4. E book	
CEMA-CC-4-8-TH ORGANIC CHEMISTRY -4	Organic Synthesis, Spectroscopy	1. Finar, I. L. <i>Organic Chemistry (Volume 1)</i> , Dorling Kindersley (India) Pvt. Ltd. (Pearson Education). 2. Finar, I. L. <i>Organic Chemistry (Volume 2: Stereochemistry and the Chemistry</i>	60	Offline method 1. Traditional method through the use of the chalk and board 2. Project-Based Learning 3. Consulting different reference books and photocopy of prepared notes 4. E book	

Subject Name/Code:

LESSON PLAN

Department Name:

Name of Faculty: Dr. Priyabrata Roy

Paper Name & Code:

Planned					
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
		<p><i>of Natural Products</i>), Dorling Kindersley (India) Pvt. Ltd.(Pearson Education).</p> <p>3. Norman, R.O. C., Coxon, J. M. <i>Principles of Organic Synthesis</i>, Third Edition, Nelson Thornes, 2003.</p> <p>4. Clayden, J., Greeves, N., Warren, S., <i>Organic Chemistry</i>, Second edition, Oxford University Press 2012.</p> <p>5. Silverstein, R. M., Bassler, G. C., Morrill, T. <i>C. Spectrometric Identification of Organic Compounds</i>, John Wiley</p>			

Subject Name/Code:

LESSON PLAN

Department Name:

Name of Faculty: Dr. Priyabrata Roy

Paper Name & Code:

Planned					
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
		and Sons, INC, Fifth edition. 6. Kemp, W. <i>Organic Spectroscopy</i> , Palgrave. 7. March, J. <i>Advanced Organic Chemistry</i> , Fourth edition, Wiley. 8. Warren, S. <i>Organic Synthesis the Disconnection Approach</i> , John Wiley and Sons. 9. Warren, S., <i>Designing Organic Synthesis</i> , Wiley India, 2009. 10. Carruthers, W. <i>Modern methods of Organic Synthesis</i> , Cambridge University Press.			

Subject Name/Code:

LESSON PLAN

Department Name:

Name of Faculty: Dr. Priyabrata Roy

Paper Name & Code:

Planned					
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
CEMA-CC-4-8-P PRACTICALS	Qualitative Analysis of Single Solid Organic Compounds	1. Clarke, H. T., <i>A Handbook of Organic Analysis (Qualitative and Quantitative)</i> , Fourth Edition, CBS Publishers and Distributors (2007). 2. <i>Practical Workbook Chemistry (Honours)</i> , UGBS, Chemistry, University of Calcutta, 2015.	45	Offline method 1. Traditional method through the use of the chalk and board	
SEC-B-3 PHARMACEUTICALS CHEMISTRY	Drugs & Pharmaceuticals	1. Patrick, G. L. <i>Introduction to Medicinal Chemistry</i> , Oxford University Press, UK, 2013. 2. Singh, H. & Kapoor, V.K. <i>Medicinal and Pharmaceutical Chemistry</i> , Vallabh Prakashan,	10	Offline method 1. Traditional method through the use of the chalk and board 2. Project-Based Learning 3. Consulting different reference books and photocopy of prepared notes	

Subject Name/Code:

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Department Name:

Name of Faculty: Dr. Priyabrata Roy

Paper Name & Code:

Planned					
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
		Pitampura, New Delhi, 2012.		4. E book	
CC/GE 4	Alcohols, Phenols and Ethers, Carbonyl Compounds, Carboxylic Acids and Their Derivatives...		44	Offline method 1. Traditional method through the use of the chalk and board 2. Project-Based Learning 3. Consulting different reference books and photocopy of prepared notes 4. E book	
SEC-B-3 PHARMACEUTICALS CHEMISTRY	Drugs & Pharmaceuticals	1. Patrick, G. L. Introduction to Medicinal Chemistry, Oxford University Press, UK, 2013. 2. Singh, H. & Kapoor, V.K. Medicinal and Pharmaceutical Chemistry,	10	Offline method 1. Traditional method through the use of the chalk and board 2. Project-Based Learning 3. Consulting different reference books and	

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Paper Name & Code:

Planned					
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
		Vallabh Prakashan, Pitampura, New Delhi, 2012.		photocopy of prepared notes 4. E book	
DSE-A-3-TH Green Chemistry	Green Chemistry	1. Lancaster, M. <i>Green Chemistry: An Introductory Text</i> RSC Publishing, 2nd Edition, 2010. 2. Ahluwalia, V. K & Kidwai, M. R. <i>New Trends in Green Chemistry</i> , Anamalaya Publishers, 2005. 3. Finar, I. L. <i>Organic Chemistry (Volume 2)</i> , Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).	60	Offline method 1. Traditional method through the use of the chalk and board 2. Project-Based Learning 3. Consulting different reference books and photocopy of prepared notes 4. E book	

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Paper Name & Code:

Planned					
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
DSE-A-3-P PRACTICALS	PRACTICALS - GREEN CHEMISTRY	1. Anastas, P.T & Warner, J.C. <i>Green Chemistry: Theory and Practice</i> , Oxford University Press (1998). 2. Kirchoff, M. & Ryan, M.A. <i>Greener approaches to undergraduate chemistry experiment</i> . American Chemical Society, Washington DC (2002). 3. Ryan, M.A. <i>Introduction to Green Chemistry</i> , Tinneland; (Ed), American Chemical Society, Washington DC (2002).	45	Offline method 1. Traditional method through the use of the chalk and board	
DSE-B-1-TH Green Chemistry	Green Chemistry	1. Lancaster, M. <i>Green Chemistry: An Introductory Text</i> RSC	60	Offline method 1. Traditional method through the	

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Name of Faculty: Dr. Priyabrata Roy

Paper Name & Code:

Planned					
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
		Publishing, 2nd Edition, 2010. 2. Ahluwalia, V. K & Kidwai, M. R. New Trends in Green Chemistry, Anamalaya Publishers, 2005. 3. Finar, I. L. <i>Organic Chemistry (Volume 2)</i> , Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).		use of the chalk and board 2. Project-Based Learning 3. Consulting different reference books and photocopy of prepared notes 4. E book	
DSE-B-1-P PRACTICALS	PRACTICALS - GREEN CHEMISTRY	1. Anastas, P.T & Warner, J.C. <i>Green Chemistry: Theory and Practice</i> , Oxford University Press (1998). 2. Kirchoff, M. & Ryan, M.A. <i>Greener approaches to undergraduate</i>	45	Offline method 1. Traditional method through the use of the chalk and board	

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Department Name:

Name of Faculty: Dr. Priyabrata Roy

Paper Name & Code:

Planned					
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
		<i>chemistryexperiment.</i> American Chemical Society, WashingtonDC (2002). 3. Ryan, M.A. <i>Introduction to Green Chemistry</i> , Tinneland; (Ed), American Chemical Society, WashingtonDC (2002).			
		Total	424		

Subject Name/Code:

LESSON PLAN

Department Name: Chemistry

Name of Faculty: Dr. Anuva Samanta

Course Name: Four-Year B.A./B.Sc Chemistry (Major and Minor) Course

Semester: 2

Planned				After Implementation	
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
CHEM-H-CC2-2-Th Module I	Kinetic Theory and Gaseous state: Real gas and Virial equation:	1. Levine, I. N. Physical Chemistry, 6th Edition McGraw-Hill India, 2011 2. Castellan, G. W. Physical Chemistry, Narosa , 2004 3. Atkins, P. W. & Paula, J. de, Atkins' Physical Chemistry, 11th Edition, Oxford University Press, 2018	15	On class demonstrations, study material supplied, modelling and interactive discussions	
CHEM-H-SEC2-2-Th Module I	Introduction to Artificial Intelligence, Subfields and Technologies:	1. Russell / Norvig , ARTIFICIAL INTELLIGENCE: A MODERN APPROACH , 4th Edition , Pearson Education, 2022	15	On class demonstrations, study material supplied, modelling and interactive discussions	

Subject Name/Code:

LESSON PLAN

Department Name: Chemistry

Name of Faculty: Dr. Anuva Samanta

Planned				After Implementation	
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
CHEM-H- IDC2-2-Th Module II	Complexometric titrimetry Water analysis Water treatment technologies	1. Douglas A. Skoog, D.M. West, F. James Holler, Stanley R. Crouch, Fundamentals of Analytical Chemistry, Cengage learning India Pvt Ltd. 10th Edition, 2022 2. Daniel C. Harris, Quantitative Chemical Analysis, 10th Edition, W.H. Freeman, 2020	15	On class demonstrations, study material supplied, modelling and interactive discussions	
CHEM-H- IDC2-2-Tu	Calibration of instruments like colorimeter, pH-meter, conductivity meter, spectrophotometer using reference standards or reference materials	Practical Workbook Chemistry (Honours), UGBOS, Chemistry, University of Calcutta, 2015	3	Face-to-face demonstrations, modelling and interactive discussions, study material supplied	
CHEM-H-CC2- 2-P	(1) Standardization of Na ₂ S ₂ O ₃ solution	1. Mendham, J., A. I. Vogel's Quantitative	15	On class demonstrations, study material	

LESSON PLAN

Department Name: Chemistry

Name of Faculty: Dr. Anuva Samanta

Planned				After Implementation	
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
	against standard $K_2Cr_2O_7$ solution. Iodo-/ Iodimetric Titrations Estimation of metal content in some selective samples	Chemical Analysis 6th Ed., Pearson, 2009. 2. Practical Workbook Chemistry (Honours), UGBOS, Chemistry, University of Calcutta, 2015		supplied, modelling and interactive discussions	
		Total	63		

LESSON PLAN

Department Name: Chemistry

Name of Faculty: Dr. Anuva Samanta

Course Name: Three-Year B.A./B.Sc Chemistry (Honours and General) under CBCS

Semester: 4

Planned				After Implementation	
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
CC-4-9-TH/ PHYSICAL CHEMISTRY- 4	Foundation of quantum mechanics Crystal structure	1. Atkins, P. W. <i>Molecular Quantum Mechanics</i> , 5th edition, Oxford 2. Levine, I. N. <i>Quantum Chemistry</i> , 7th Edition, Pearson India 3. Sannigrahi A.B, Quantum Chemistry, 2nd Edition, Books and Allied Pvt Ltd.	40	Face-to-face demonstrations, class test, modelling and interactive discussions	
		Total	40		

LESSON PLAN

Department Name: Chemistry

Name of Faculty: Dr. Anuva Samanta

Semester: 6

Planned				After Implementation	
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
CC14 Physical Chemistry-5	Photochemistry and Theory of reaction rate, Surface phenomenon	1. Banwell, C. N. Fundamentals of Molecular Spectroscopy, Tata-McGraw-Hill 2. Barrow, G. M. Molecular Spectroscopy, McGraw-Hill 3. Hollas, J.M. Modern Spectroscopy, Wiley India 4. McHale, J. L. Molecular Spectroscopy, Pearson Education 5. Wayne, C. E. & Wayne, R. P. Photochemistry, OUP 6. Brown, J. M. Molecular Spectroscopy, OUP	30	Face-to-face demonstrations, modelling and interactive discussions	
CC14 Practical	Advanced physicochemical experiments	Practical Workbook Chemistry (Honours), UGBOS, Chemistry,	45	On class discussion, demonstrations, practical	

Subject Name/Code:

LESSON PLAN

Department Name: Chemistry

Name of Faculty: Dr. Anuva Samanta

Planned				After Implementation	
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
Physical Chemistry-5		University of Calcutta, 2015			
DSE(B)-6-4-TH/ DISSERTATION	Topics on physical chemistry		105	Guidance and support for research or review work	
		Total	180		

LESSON PLAN

Department Name: Chemistry

Name of Faculty: Dr. Ishita Saha

Paper Name & Code: Physical Chemistry

Planned					
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
SEC 2-2-TH	Artificial Intelligence	Artificial Intelligence A modern Approach 4 th Edition , Pearson Education , 2022	15	Offline method 1. Traditional method through the use of the chalk and board 2. Project-Based Learning 3. Consulting different reference books and photocopy of prepared notes	
CC2-2-P	Iodo-/Iodimetric Titrations, Estimation of metal content in some selective samples	Quantitative analysis by Vogel	12		
IDC 2-2-Th	Chemistry in daily life	Quantitative analysis by Vogel Analytical Chemistry by Skoog	15	Offline method 1. Traditional method through the use of the chalk and board	

LESSON PLAN

Department Name: Chemistry

Name of Faculty: Dr. Ishita Saha

Paper Name & Code: Physical Chemistry

Planned					
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
				2. Project-Based Learning 3. Consulting different reference books and photocopy of prepared notes 4. E book	
CEMA-CC-4-9-TH Physical CHEMISTRY -4	Vapour pressure of solution; Ideal solutions, ideally diluted solutions and colligative properties; Raoult's law; Thermodynamic derivation using chemical potential to derive relations between the	. Levine, I. N. Physical Chemistry, 6th Edition , McGraw-Hill India 2. Castellan, G. W. Physical Chemistry, Narosa 3. McQuarrie, D. A. & Simons, J. D. Physical Chemistry: A Molecular Approach, Viva Press 4. Kapoor K.L, A Text Book Of Physical Chemistry , McGraw Hill India of Thermodynamics by K.L. Kapoor Vol-4	60	Offline method 1. Traditional method through the use of the chalk and board 2. Project-Based Learning 3. Consulting different reference books and photocopy of prepared notes 4. E book	

LESSON PLAN

Department Name: Chemistry

Name of Faculty: Dr. Ishita Saha

Paper Name & Code: Physical Chemistry

Planned					
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
	four colligative properties				
CEMA-CC-4-9-P PRACTICALS	Kinetic study of inversion of cane sugar using a Polarimeter (Preferably Digital) Experiment 2: Study of Phase diagram of Phenol-Water system. Experiment 3: Determination of partition coefficient for the distribution of I ₂ between water and CCl ₄	1 Viswanathan, B., Raghavan, P.S. Practical Physical Chemistry Viva Books (2009) 2. Mendham, J., A. I. Vogel's Quantitative Chemical Analysis 6th Ed., Pearson 3. Harris, D. C. Quantitative Chemical Analysis. 9th Ed., Freeman (2016) 4. Palit, S.R., De, S. K. Practical Physical Chemistry Science Book Agency 5. Levitt, B. P. edited Findlay's Practical Physical Chemistry Longman Group Ltd. 6. Gurtu, J. N., Kapoor, R., Advanced Experimental Chemistry S. Chand & Co.	45	Offline method 1. Traditional method through the use of the chalk and board	

LESSON PLAN

Department Name: Chemistry

Name of Faculty: Dr. Ishita Saha

Paper Name & Code: Physical Chemistry

Planned					
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
	Experiment 4: Determination of pH of unknown solution (buffer), by colour matching method Experiment 5: pH-metric titration of acid (mono- and di-basic) against strong base Experiment 6 : pH-metric titration of a tribasic acid against strong base.	Ltd. 7. Practical Workbook Chemistry (Honours), UGBS, Chemistry, University of Calcutta, 2015 2. <i>Practical Workbook Chemistry (Honours), UGBS, Chemistry, University of Calcutta, 2015.</i>			

Subject Name/Code:

LESSON PLAN

Department Name: Chemistry

Name of Faculty: Dr. Ishita Saha

Paper Name & Code: Physical Chemistry

Planned					
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
CC/GE 4	Quantum Chemistry and spectroscopy	Dutta, S.K., Physical Chemistry Experiments Bharati Book Stall	44	Offline method 1. Traditional method through the use of the chalk and board 2. Project-Based Learning 3. Consulting different reference books and photocopy of prepared notes 4. E book	
CEMA-CC5-11-Th	Statistical Thermodynamics and numerical analysis	7. Levine, I. N. Quantum Chemistry, 7th Edition, Pearson India 8. Maron, S. & Prutton Physical Chemistry 9. Ball, D. W. Physical Chemistry, Thomson Press 10. Mortimer, R. G. Physical Chemistry, Elsevier 11. Glasstone, S. & Lewis, G.N. Elements of Physical	10	Offline method 1. Traditional method through the use of the chalk and board 2. Project-Based Learning 3. Consulting different reference books and photocopy of prepared notes 4. E book	

Subject Name/Code:

LESSON PLAN

Department Name: Chemistry

Name of Faculty: Dr. Ishita Saha

Paper Name & Code: Physical Chemistry

Planned					
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
		Chemistry 12. Rakshit, P.C., Physical Chemistry Sarat Book House 14. Klotz, I.M., Rosenberg, R. M. Chemical Thermodynamics: Basic Concepts and Methods , Wiley			
			60	Offline method 1. Traditional method through the use of the chalk and board 2. Project-Based Learning 3. Consulting different reference books and photocopy of prepared notes 4. E book	

LESSON PLAN

Department Name: Chemistry

Name of Faculty: Dr. Soumavo Ghosh

Course Name: Four-Year B.A./B.Sc Chemistry (Honours and Honours with Research) Course under ccf

Semester: 2

Planned				After Implementation	
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
CHEM-H-CC2-2-Th/ Module : II	i) Ionic bond: General characteristics, types of ions, size effects, radius ratio rule and its application and limitations. Packing of ions in crystals. Born-Lande equation with derivation and importance of Kapustinskii expression for lattice energy. Madelung constant, Born-Haber cycle and its application, Solvation energy. Defects in solids (elementary idea). Solubility energetics of dissolution process.	J. E. Huheey, E. A. Keiter, R. L. Keiter, Okhil K. Medhi , Principles of Structure and Reactivity, 5 th Edition ,Pearson India, 2022	8	Face-to-face demonstrations, modelling and interactive discussions	
CHEM-H-SEC2-2-Th/ Module: III	Ethical guidelines and responsible AI practices, AI and Innovation, Emerging trends and future directions in AI, AI and creativity: Generative models and artistic applications	Russell / Norvig , ARTIFICIAL INTELLIGENCE: A MODERN APPROACH , 4th Edition , Pearson Education, 2022	15	Face-to-face demonstrations, modelling and interactive discussions	
CHEM-H-IDC2-2-Th/Module: I	Introduction to Quantitative analysis and its interdisciplinary nature: Definitions of analysis, determination, measurement,	Douglas A. Skoog, D.M. West , F. James Holler , Stanley R. Crouch, Fundamentals of Analytical Chemistry , Cengage learning India	10	Face-to-face demonstrations, modelling and interactive discussions	

Subject Name/Code:

LESSON PLAN

Department Name: Chemistry

Name of Faculty: Dr. Soumavo Ghosh

Planned				After Implementation	
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
	techniques and methods. Classification of analytical techniques. Choice of an analytical method -accuracy, precision, sensitivity . Errors: Determinate and indeterminate errors, absolute error, relative error, minimization of errors. Statistical treatment of finite samples - mean, median, range, standard deviation and variance. External standard calibration - regression equation (least squares method), correlation coefficient (R_2). Presentation of experimental data and results from the point of view of significant figures.	Pvt Ltd. 10 th Edition , 2022			
CHEM-H-IDC2-2-Tu	Calibration of glassware, pipette, burette and volumetric flask, Preparation of TLC plates and separation of amino acids	Douglas A. Skoog, D.M. West , F. James Holler , Stanley R. Crouch, Fundamentals of Analytical Chemistry , Cengage learning India Pvt Ltd. 10 th Edition , 2022	3	Face-to-face demonstrations, modelling and interactive discussions	
		Total	36		

LESSON PLAN

Department Name: Chemistry

Name of Faculty: Dr. Soumavo Ghosh

Course Name: Three-Year B.A./B.Sc Chemistry (Honours) under CBCS

Semester: 4

Planned				After Implementation	
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
CC-4-10-TH/ INORGANIC CHEMISTRY-4	d-d transitions; L-S coupling; qualitative Orgel diagrams... ...charge transfer spectra, Chemistry of f- block elements Inorganic Reaction Kinetics and Mechanism	J. E. Huheey, E. A. Keiter, R. L. Keiter, Okhil K. Medhi , Principles of Structure and Reactivity, 5 th Edition ,Pearson India, 2022	30	Face-to-face demonstrations, modelling and interactive discussions	
CC-4-10-P	Inorganic preparations, Instrumental Techniques: 1. Measurement of 10Dq by spectrophotometric method. 2. Determination of λ_{\max}	Inorganic Synthesis, Vol. 1-10.	45	Face-to-face demonstrations, hand on experiment and interactive discussions	
		Total	75		

Subject Name/Code:

LESSON PLAN

Department Name: Chemistry

Name of Faculty: Dr. Soumavo Ghosh

Semester: 6

Planned				After Implementation	
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
CC-6-13-TH/ INORGANIC CHEMISTRY-5	Theoretical Principles in Qualitative Analysis of anions, Organometallic Chemistry	Cotton, F.A., Wilkinson, G., Murrillo, C. A., Bochmann, M., Advanced Inorganic Chemistry 6th Ed. 1999., Wiley.	30	Face-to-face demonstrations, modelling and interactive discussions	
DSE(B)-6-4-TH/ DISSERTATION	Topics on inorganic and analytical chemistry		105	Guidance and support for research or review work	
		Total	135		

Subject Name/Code:

LESSON PLAN

Department Name: Chemistry

Name of Faculty: Dr. Soumavo Ghosh

Course Name: Four-Year B.A./B.Sc Chemistry (Minor) Course and Three-Year B.A./B.Sc Chemistry (Multidisciplinary Courses of Studies) Course

Semester: 2

Planned				After Implementation	
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
CHEM-H-CC2-2-Th/ Module : II for Minor and CHEM-MD-CC2-2-Th/ Module : II for MDC	Chemical Bonding – I: i) Ionic bond: General characteristics, types of ions, size effects, radius ratio rule and its application and limitations. Packing of ions in crystals. Born-Lande equation with derivation and importance of Kapustinskii expression for lattice energy. Madelung constant, Born-Haber cycle and its application, Solvation energy. Defects in solids (elementary idea). Solubility energetics of dissolution process. ii) Covalent bond: Polarizing power and polarizability, ionic potential, Fajan's rules, Lewis structures, formal charge, Valence Bond Theory, The hydrogen molecule (Heitler – London approach), directional character of covalent bonds, hybridizations, equivalent and non-equivalent hybrid orbitals, Bent's rules, dipole moments, VSEPR theory,	Lee, J. D. Concise Inorganic Chemistry, 5th Ed., Wiley India Pvt. Ltd., 2008.	(15 Lectures)	Face-to-face demonstrations, modelling and interactive discussions	

Subject Name/Code:

LESSON PLAN

Department Name: Chemistry

Name of Faculty: Dr. Soumavo Ghosh

Planned				After Implementation	
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
	shapes of molecules and ions containing lone pairs (examples from main group chemistry) and multiple bonding (σ and π bond approach).				
		Total	15		

Course Name: Three-Year B.A./B.Sc Chemistry (general) Course under CBCS

Semester: 4

Planned				After Implementation	
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
CC 4/GE 4 TH			0		
CC 4/GE 4 P	1. Qualitative Analysis of Single Solid Organic Compound 2. Identification of a pure organic compound	Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education.	45	Face-to-face demonstrations, hand on experiment and interactive discussions	
SEC(B)-4-3-TH	Fermentation	Foye, W.O., Lemke, T.L. & William, D.A.: Principles of	15	Face-to-face demonstrations,	

Subject Name/Code:

LESSON PLAN

Department Name: Chemistry

Name of Faculty: Dr. Soumavo Ghosh

Planned				After Implementation	
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
PHARMACEUTICALS CHEMISTRY		Medicinal Chemistry, 4th ed., B..I. Waverly Pvt. Ltd. New Delhi.		modelling and interactive discussions	
		Total	60		

Semester: 6

Planned				After Implementation	
Unit / Group / Module / Article	Topics	Reference Books	No of Lecture Planned	Content Delivery Technique	Remarks / Comments
SEC(B)-6-4-TH PESTICIDE CHEMISTRY	General introduction to pesticides (natural and synthetic), benefits and adverse effects, changing concepts of pesticides,	R. Cremlyn: Pesticides, John Wiley.	15	Face-to-face demonstrations, modelling and interactive discussions	
		Total	15		

Subject Name/Code: