

Department of Chemistry

ATTENDANCE SHEET -CUM- MINUTES OF BOARD OF STUDIES

Minutes of the meeting of the Board of Studies of Chemistry (Subject)
held on 31-3-15 (date) at 10-15 (time).

PRESENT

(Name)		(Signature)
1. <u>Prof. S. Dass</u>	(Chairperson)	<u>S. Dass</u>
2. <u>Prof. H.M. Chawla</u>	(External Expert 1)	<u>H.M. Chawla</u>
3. <u>Prof. G. Ramanathan</u>	(External Expert 2)	<u>G. Ramanathan</u>
4. <u>Prof. M. M. Swastika</u>	(Internal Member)	<u>M.M. Swastika</u>
5. <u>Prof. Rohit Shrivastav</u>	(Internal Member)	<u>Rohit Shrivastav</u>
6. <u>Prof. Parag</u>	(Internal Member)	<u>Parag</u>
7. <u>Prof. Suresh Kumar</u>	(Internal Member)	<u>S. Kumar</u>
8. <u>Prof. K. M. Kumari</u>	(Internal Member)	<u>K.M. Kumari</u>
9. <u>Prof. Shalini Swastika</u>	(Internal Member)	<u>S. Swastika</u>
10. <u>Dr. Anita</u>	(Internal Member)	<u>Anita</u>
11. <u>Dr. Rashika</u>	"	<u>Rashika</u>
<u>Proposed changes in the existing system</u>		
12. <u>Dr. Pushpa</u>	"	<u>Pushpa</u>
13. <u>Dr. Sudhis Verma</u>	"	<u>Sudhis Verma</u>

Changes / Modifications in the existing
Syllabus are attached
S. Dass

(Signature of Chairperson)

Course Template

1	Department/Centre proposing the course	Department of Chemistry
2	Course Title (< 45 characters)	Fundamentals of Chemistry: Bio Group
3	L-T-P Structure	(4-0-0)
4	Credits	3
5	Course Number	CHH 101
6	Status (category for program)	Elective
7	Status vis-à-vis other courses (give course number/title)	
7.1	Overlap with any UG/ PG course of Department/ Centre	No
7.2	Overlap with any UG/ PG course of other Department/ Centre	No
8	Frequency of offering	Every Year
9	Faculty who will teach the course	Dr Radhika Singh
10	Will the course require visiting faculty?	No
11	Course objectives (about 50 words) indicating motivation and aims	To provide insight about the topics:

1	Department/Centre proposing the course	Department of Chemistry
2	Course Title (< 45 characters)	Fundamentals of Chemistry: Maths Group
3	L-T-P Structure	(4-0-0)
4	Credits	3
5	Course Number	CHH 102
6	Status (category for program)	Elective
7	Status vis-à-vis other courses (give course number/title)	
7.1	Overlap with any UG/ PG course of Department/ Centre	No
7.2	Overlap with any UG/ PG course of other Department/ Centre	No
8	Frequency of offering	Every Year
9	Faculty who will teach the course	Dr Radhika Singh
10	Will the course require visiting faculty?	No
11	Course objectives (about 50 words) indicating motivation and aims	Fundamentals of Chemistry: Maths Group provides the knowledge of Thermodynamics, Chemical Bonding, Acid-Base equilibria in aqueous solutions, Chemical kinetics, Chemistry of elements necessary for life and Chemistry of Biomolecules.

Course Template

EXISTING	PROPOSED	JUSTIFICATION
CHH 101 & CHH 102		
<p>UNIT 3</p> <p>ACID-BASE EQUILIBRIA IN AQUEOUS SOLUTIONS: Ionisation of water, solutions of strong acids and bases, the concept of pH, Conjugate acid-base systems in aqueous solutions, equilibria involving weak acid-base system, control of pH, buffers, acid-base equilibrium in salt solutions, acid-base titrations, ionisation of polyprotic acids, acid base indicators, hydrolysis, hard and soft acid and base concept.</p> <p>CHEMICAL KINETICS: Order and molecularity of reactions, rate expression for different orders and half life periods, collision theory, reaction mechanisms, Arrhenius concept, activation energy and its measurements, catalysis, free radicals and chain reaction.</p> <p>SUGGESTED READINGS: Soni PL: TEXT BOOK OF INORGANIC CHEMISTRY Madan RD: MODERN INORGANIC CHEMISTRY Cotton FA & Wilkinson G: BASIC INORGANIC CHEMISTRY Bahl BS & Bahl A: TEXT BOOK OF ORGANIC CHEMISTRY Soni PL: TEXT BOOK OF ORGANIC CHEMISTRY Mortimier Charles E: CHEMISTRY A CONCEPTUAL APPROACH Hill & Hollman: CHEMISTRY IN CONTEXT Puri BR & Sharma LR PRINCIPLES OF PHYSICAL CHEMISTRY Brandy JE: General Chemistry-PRINCIPLE AND STRUCTURE</p>	<p>Unit 3 remains as such and Enzyme catalysis and enzyme inhibition has been added.</p> <p>SUGGESTED READINGS: P L Soni and Puri and Sharma have been deleted and Introductory Chemistry by Zumdahl has been added. Other books remain as such.</p>	<p>Enzyme is a biocatalyst and enzyme kinetics is correlated to chemical kinetics.</p> <p>Books like P.L.Soni & Puri and Sharma has errors. Introductory Chemistry by S.H.Zumdahl is a good book and covers the entire syllabus.</p>

1	Department/Centre proposing the course	Department of Chemistry
2	Course Title (< 45 characters)	Chemistry Practical
3	L-T-P Structure	(0-0-4)
4	Credits	3
5	Course Number	CHH 103
6	Status (category for program)	Elective

7	Status vis-à-vis other courses (give course number/title)		
EXISTING CHH 103	Overlap with any UG/ PG course of	PROPOSED	JUSTIFICATION
	Department/ Centre		
7.2	Overlap with any UG/ PG course of other Department/ Centre	No	
8	Frequency of offering	Every Semester	
9	Faculty who will teach the course	Dr Pushpa Sahni	
10	Will the course require visiting faculty?	No	
11	Course objectives (about 50 words) indicating motivation and aims	Chemistry Practical provides the knowledge and hands on experience of Qualitative and Quantitative analysis.	

Course Template

<p>QUALITATIVE ANALYSIS:</p> <p>(a) Mixture of salts by semi-micro method containing not more than five ions including insoluble and interfering ions</p> <p>(b) Systematic identification of organic compounds.</p> <p>QUANTITATIVE ANALYSIS:</p> <p>(a) Volumetric estimation {Hardness of water and Iodometry}</p>	<p>The syllabus of CHH 103 has been redesigned as follows:</p> <p>QUALITATIVE ANALYSIS</p> <p>a) Remains as such b) Identification of organic compounds has been replaced by analysis of monofunctional groups.</p> <p>QUANTITATIVE ANALYSIS</p> <p>a) Remains as such b) Introductory experiments on estimation of I and I₂ in samples of daily life (various types of salts) has been added. c) Similarly estimation of sugar in cane sugar has been added.</p>	<p>Exposure to the real life applications of chemistry for better understanding of concepts and final integration with existing course work.</p>
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Course Template

1	Department/Centre proposing the course	Department of Chemistry
2	Course Title (< 45 characters)	Organic Chemistry I
3	L-T-P Structure	(2-0-0)
4	Credits	2
5	Course Number	CHM 102
6	Status (category for program)	Core
7	Status vis-à-vis other courses (give course number/title)	
7.1	Overlap with any UG/ PG course of Department/ Centre	No
7.2	Overlap with any UG/ PG course of other Department/ Centre	No
8	Frequency of offering	Every Semester
9	Faculty who will teach the course	Prof K M Kumari
10	Will the course require visiting faculty?	No
11	Course objectives (about 50 words) indicating motivation and aims	Organic Chemistry I provides the knowledge of Organic Acids and Bases, Electronic Displacements in covalent bonds, Alkanes and Cycloalkanes, Alkenes, Dienes and Alkynes.

1	Department/Centre proposing the course	Department of Chemistry
2	Course Title (< 45 characters)	Organic Chemistry II
3	L-T-P Structure	(2-0-0)
4	Credits	2
5	Course Number	CHM 202
6	Status (category for program)	Core

Course Template

7	Status vis-à-vis other courses (give course number/title)	
7.1	Overlap with any UG/ PG course of	No
1	Department/Centre proposing the	Department of Chemistry
7.2	course	
7.2	Overlap with any UG/ PG course of other	No
2	Department/Centre (Course Characters)	Organic Chemistry III
3	Frequency of offering	(3-0-0) Semester
4	Credits	3
9	Faculty who will teach the course	Prof Surat Kumar
5	Course Number	CHM 302
10	Will the course require visiting faculty?	No
11	Course objectives (about 50 words) indicating motivation and aims	Organic Chemistry II provides the knowledge of Benzenoids and Aromaticity, Aldehydes and Ketones, Alkyl and Aryl Halides, Alcohol, Phenols and Ethers and Diazonium salts and Related Compounds.

Course Template

6	Status (category for program)	Core
7	Status vis-à-vis other courses (give course number/title)	
1 7.1	Department/Centre proposing the course Overlap with any UG/ PG course of Department/ Centre	Department of Chemistry No
2 7.2	Course Title (< 45 characters) Overlap with any UG/ PG course of other Department/ Centre	Organic Chemistry IV No
3	Department/Centre	(3-0-0)
4	Frequency of offering	Every Semester
9	Faculty who will teach the course	Dr Radhika Singh
10	Will the course require visiting faculty?	No
11	Course objectives (about 50 words) indicating motivation and aims	Organic chemistry III, provides the knowledge of following organic compounds: Carboxylic acids and their derivatives, Amino compounds, Nitro compounds and their derivatives, sulphonic acids and Carbohydrates.

Course Template

5	Course Number	CHM 402		
6	Status (category for program)	Core		
	EXISTING	PROPOSED	JUSTIFICATION	
7	Status vis-à-vis other courses (give course number/title) CHM 102, 202, 302, 402			
7.1	Overlap with any UG/ PG course of Department/ Centre	No		
7.2	Overlap with any UG/ PG course of other Department/ Centre	No		
8	Frequency of offering	Every Semester		
9	Faculty who will teach the course	Dr Radhika Singh		
10	Will the course require visiting faculty?	No		
11	Course objectives (about 50 words) indicating motivation and aims	Organic chemistry IV, provides the knowledge of following aspects: Stereochemistry of organic compounds, Polynuclear hydrocarbons, Heterocyclic compounds and Organic polymers. It also familiarizes the students with basic concepts of Chromatography.		

	SUGGESTED READINGS: Bahl B.S. & Bahl A., "Advanced Organic Chemistry", Sultan Chand & Co., New Delhi.	In SUGGESTED READINGS , Organic Chemistry by Clayden, Greeves and Warren (Oxford University Press, 2012) and Organic Chemistry by T W Graham Solomons and Fryhle (Wiley, 2013) has been added along with the existing books.	Addition of foreign author books for better understanding of the subject.
1	Department/Centre proposing the Course Somaiya L., "Text Book of Organic Chemistry", Sultan Chand & Co., New Delhi.	Department of Chemistry	
2	Berselow R., "Organic Reaction Mechanism", Benjamin Inc., 6 California. Course Title (<= 45 characters)	Applied Chemistry	
3	Brook Structure Introduction to Electronic Theory of Organic Chemistry", ELBS Longmans, U.K.	(3-1-0)	
	Morrison and Boyd, Organic Chemistry, Gurney and Jackson, Edinburg.		

Course Template

4	Credits	3
5	Course Number	CHM 181
6	Status (category for program)	Core
7	Status vis-à-vis other courses (give course number/title)	
7.1	Overlap with any UG/ PG course of Department/ Centre	No
7.2	Overlap with any UG/ PG course of other Department/ Centre	No
8	Frequency of offering	Every Semester
9	Faculty who will teach the course	Prof Surat Kumar
10	Will the course require visiting faculty?	No
11	Course objectives (about 50 words) indicating motivation and aims	Applied Chemistry provides the knowledge of Water, Fuels, Lubricants and Metallurgy. It also deals with basics of Environment and Energy.

EXISTING	PROPOSED	JUSTIFICATION
CHM 181		

<p>UNIT 4 [10 pds]</p> <p>INTRODUCTION TO METALLURGY: General principle of ore dressing. Preliminary methods in the extraction of metals.</p> <p>NON-FERROUS METALLURGY: Metallurgy of copper, Aluminium, lead and tin. Their alloys and their uses.</p> <p>UNIT 5 [10 pds]</p> <p>FERROUS METALLURGY: Manufacture of pig iron, manufacture of cast iron. Types of cast iron. Manufacture of wrought iron, Manufacture of steel. Different methods. Impurities and their effects on properties of steel. S.G. iron.</p>	<p>Applied Chemistry</p> <p>Unit 4 and Unit 5 were devoted to Metallurgical operations and Ferrous and Non ferrous metallurgies. Now they are merged.</p> <p>New Unit 4 consists of Metallurgical operations and representative non ferrous metallurgy (Copper) alloys and manufacture of pig iron, cast iron and steel. [8 pds]</p>	<p>To introduce an important topic 'Environment and Energy- Metallurgical Operation' have been clubbed in one unit.</p>
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Course Template

1	Department/Centre proposing the course	Department of Chemistry
2	Course Title (< 45 characters)	Physical Chemistry II
3	L-T-P Structure	(2-0-0)
4	Credits	2
5	Course Number	CHM 203
6	Status (category for program)	Core
7	Status vis-à-vis other courses (give course number/title)	
7.1	Overlap with any UG/ PG course of Department/ Centre	No
7.2	Overlap with any UG/ PG course of other Department/ Centre	No
8	Frequency of offering	Every Semester
9	Faculty who will teach the course	Dr Pushpa Sahni
10	Will the course require visiting faculty?	No
11	Course objectives (about 50 words) indicating motivation and aims	Physical Chemistry II provides the knowledge of Chemical Kinetics, Photochemistry, Catalysis, Macromolecules, Electrical and Magnetic Properties of Matter.

EXISTING	PROPOSED	JUSTIFICATION
CHM 203		
<p>UNIT 4: MACROMOLECULES</p> <p>Characteristics of macromolecules (addition and condensation polymerization), degree of polymerization. Concept of number and weight average molecular masses, osmometry, viscometry, light scattering and diffusion methods in studies of average molecular weights, shapes of macromolecules.</p> <p>UNIT 5: ELECTRICAL AND MAGNETIC PROPERTIES OF MATTER</p> <p>Intermolecular forces and dipole moments, Clausius-Mossotti equation, Dipole moment and molecular polarisabilities and their measurements. Diamagnetism, paramagnetism, magnetic susceptibility and its measurements, molecular interpretation.</p>	<p>UNIT 4 and UNIT 5 from CHM 203 have been shifted to CHM 403 as UNIT 2 and UNIT 4.</p> <p>New addition in UNIT 5 about 'CHEMICAL EQUILIBRIUM' in CHM 203 - as detailed below (not covered earlier).</p> <p>Equilibrium Constant and Free Energy, Law of Mass Action, Le-Chatlier's Principle, Reaction Isotherms and Reaction Isochore, Clausius Clapeyron Equation, Applications</p>	<p>Experiments on colligative properties (Molecular weight determination of solutes) are conducted in the 3rd Semester, hence the students will have a prior knowledge of the concepts involved</p> <p>Experiments on distribution coefficient are conducted in the 3rd Semester, hence the students will have a prior knowledge of the concepts involved.</p>

1	Department/Centre proposing the course	Department of Chemistry
2	Course Title (< 45 characters)	Physical Chemistry IV
3	L-T-P Structure	(3-0-0)
4	Credits	3
5	Course Number	CHM 403
6	Status (category for program)	Core
7	Status vis-à-vis other courses (give course number/title)	
7.1	Overlap with any UG/ PG course of Department/ Centre	No
7.2	Overlap with any UG/ PG course of other Department/ Centre	No
8	Frequency of offering	Every Semester
9	Faculty who will teach the course	Dr Sudhir Kumar Verma
10	Will the course require visiting faculty?	No
11	Course objectives (about 50 words) indicating motivation and aims	Physical Chemistry IV provides the knowledge of Surface Chemistry, Solutions and Colligative Properties, Phase Equilibria and Phase Rule, The Distribution Law and Introduction To Quantum Chemistry

Course Template

EXISTING	PROPOSED	JUSTIFICATION
CHM 403		
<p>UNIT 2: SOLUTIONS AND COLLIGATIVE PROPERTIES</p> <p>Ideal and non-ideal solution, Types of Deviations, Dilute solutions, Raoult's Law and Henry's Law. Relative lowering of vapour pressure. Elevation in boiling point, depression in freezing point, osmosis, osmotic pressure and its determination. Relation between Colligative properties and molecular mass. Van't Hoff factor, abnormal molar mass.</p> <p>UNIT 4: THE DISTRIBUTION LAW</p> <p>Distribution coefficient, distribution law, conditions for the validity of distribution law. Association and dissociation of solute in one of the solvents. Chemical combination of solute with one of the solvents. Applications of distribution, process of extraction.</p>	<p>UNIT 2 and UNIT 4 of CHM 403 have been shifted to CHM 203 as UNIT 4 and UNIT 5</p>	<p>Experiments on colligative properties (Molecular weight determination of solutes) are conducted in the 3rd Semester, hence the students will have prior knowledge of the concepts involved</p> <p>Experiments on distribution coefficient are conducted in the 3rd semester, hence the students would already be acquainted with the concepts as students have already studied distribution law in the 2nd Semester.</p>

1	Department/Centre proposing the course	Department of Chemistry
2	Course Title (< 45 characters)	Biology for Chemists
3	L-T-P Structure	(4-0-0)

4	Credits	4
5	Course Number	CHM 504
6	Status (category for program)	Core
7	Status vis-à-vis other courses (give course number/title)	
7.1	Overlap with any UG/ PG course of Department/ Centre	No
7.2	Overlap with any UG/ PG course of other Department/ Centre	No
8	Frequency of offering	Every Semester
9	Faculty who will teach the course	Prof K M Kumari and Dr Radhika Singh
10	Will the course require visiting faculty?	No
11	Course objectives (about 50 words) indicating motivation and aims	Biology for Chemists provides the knowledge of Cell Structure and Functions, Carbohydrates, Lipids, Proteins and Enzymes, Nucleic Acids and physiological Processes and Functioning of Excitable Tissues (Nerves and Muscles)

Course Template

EXISTING	PROPOSED	JUSTIFICATION
CHM 504		

<p>UNIT 2</p> <p>A. CARBOHYDRATES</p> <p>Carbohydrates of physiologic significance. Carbohydrate metabolism- Kreb's cycle, glycolysis, glycogenesis, glycogenolysis, gluconeogenesis, pentose phosphate pathway. Biological importance of carbohydrates.</p> <p>B. LIPIDS</p> <p>Fatty acids, essential fatty acids, fats, oils and waxes, steroids and sterols. Biological importance of lipids.</p> <p>UNIT 3: PROTEINS AND ENZYMES [10 pds]</p> <p>Protein structure. Protein structure related to function. Biological importance of proteins. Introduction to enzymes, factors affecting enzyme activity. Enzyme kinetics and inhibition.</p> <p>UNIT 3</p>	<p>UNIT 2 and UNIT 3 consisting of carbohydrates, lipids, proteins and enzymes has been merged and the UNIT has been renamed as BIOMOLECULES as UNIT 2.</p> <p>The newly designed Unit 2: BIOMOLECULES (10 periods).</p> <p>A) BASIC DESIGN OF METABOLISM Autotrophs, heterotrophs, metabolic pathways, catabolism, anabolism, ATP as energy currency, reducing power of the cell. Metabolism of Carbohydrates, lipids, and amino acids.</p> <p>B) PROTEINS AND PROTEIN STRUCTURE.</p> <p>Protein structure related to function. Biological importance of proteins.</p> <p>New UNIT 3 has been designed as follows:</p> <p>FUNCTIONING OF EXCITABLE TISSUES, NERVES AND MUSCLES (10 periods).</p> <p>Structure of neuron, Propagation of nerve impulse (myelinated and non-myelinated nerve fiber); Structure of skeletal muscle, Mechanism of muscle contraction Neuromuscular junction</p>	<p>Unit 2 and 3 are merged with a view that this paper should be more biology oriented being taught to students of Maths background.</p>
<p>UNIT 5: PHYSIOLOGICAL PROCESSES</p> <p>A brief introduction of physiological processes of digestion & absorption, respiration, excretion and osmoregulation blood and its circulation.</p>	<p>UNIT 5: has been elaborated as follows</p> <p>PHYSIOLOGICAL PROCESSES</p> <p>a) Physiology of Digestion Structure and function of digestive glands; Digestion and absorption of carbohydrates, fats and proteins;</p> <p>b) Respiratory Physiology External and internal Respiration, Transport of oxygen and carbon dioxide in blood, Factors affecting transport of gases</p> <p>c) Cardiovascular Physiology Structure of heart, Coordination of heartbeat, Cardiac cycle, ECG</p> <p>d) Renal Physiology Functional anatomy of kidney, Mechanism and regulation of urine formation,</p>	<p>Physiology aspect is elaborated to make this paper Biology oriented as the paper is taught to students from Maths background.</p>

1	Department/Centre proposing the course	Department of Chemistry
2	Course Title (< 45 characters)	Computer Aided Statistical Techniques
3	L-T-P Structure	(4-0-0)
4	Credits	4
5	Course Number	CHM 604
6	Status (category for program)	Core
7	Status vis-à-vis other courses (give course number/title)	
7.1	Overlap with any UG/ PG course of Department/ Centre	No
7.2	Overlap with any UG/ PG course of other Department/ Centre	No
8	Frequency of offering	Every Semester
9	Faculty who will teach the course	Dr Anita Lakhani and Dr Sudhir Kumar Verma
10	Will the course require visiting faculty?	No
11	Course objectives (about 50 words) indicating motivation and aims	<p>Computer Aided Statistical Techniques provides the knowledge of following aspects:</p> <ol style="list-style-type: none"> 1. Basic statistics I 2. Basic statistics II 3. Basic statistics III 4. Elements of computer programming 5. Computer aided chemical computations

Course Template

EXISTING	PROPOSED	JUSTIFICATION
CHM 604		
Numerical Techniques	Title is changed to “ Computer Aided Statistical Techniques ” from the existing title “ Numerical Techniques ”	Better Nomenclature

1	Department/Centre proposing the course	Department of Chemistry
2	Course Title (< 45 characters)	Physical Chemistry I
3	L-T-P Structure	(4-0-0)
4	Credits	3.5
5	Course Number	CHM 703

6	Status (category for program)	Core
7	Status vis-à-vis other courses (give course number/title)	
7.1	Overlap with any UG/ PG course of Department/ Centre	No
7.2	Overlap with any UG/ PG course of other Department/ Centre	No
8	Frequency of offering	Every Semester
9	Faculty who will teach the course	Prof Rohit Srivastava and Dr Anita Lakhani
10	Will the course require visiting faculty?	No
11	Course objectives (about 50 words) indicating motivation and aims	Physical Chemistry I provides the knowledge of Classical and Statistical Thermodynamics, Non Equilibrium Thermodynamics and Chemical Dynamics.

Course Template

EXISTING	PROPOSED	JUSTIFICATION
CHM 703		
UNIT 4: CHEMICAL DYNAMICS – I Kinetics of reactions in solutions: salt effect, effect of pressure and dielectric constant on reaction rates. Methods of determining rate laws, collision theory	In Unit 4 (Chemical Dynamics - I) few new topics e.g. Influence of substituent on reaction rates, electronic theories of organic reactivity, Linear free energy relationship, Kinetic isotope effect, Acid	Syllabus restructured, removing some topics that were already taught in CHM 603 (Unit 1)

<p>of reaction rates, steric factor, activated complex theory, Arrhenius equation and the activated complex theory, steady state kinetics, kinetic and thermodynamic control of reactions, unimolecular reactions, dynamics of unimolecular reactions (Lindemann – Hinshelwood and Rice – Ramsperger-Kassel Marcus(RRKM) theories of unimolecular reactions.</p>	<p>base catalysis and enzyme catalysis have been added.</p> <p>Topics Deleted: (already taught in CHM 603)</p> <p>Kinetics of Reactions and Solution; Salt Effect, Effect of Pressure and Dielectric Constant on Reaction Rates, Collision Theory of Reaction Rates, Steric factor, Activated Complex Theory, Arrhenius Equation and The Activated Complex Theory.</p>	
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Course Template

1	Department/Centre proposing the course	Department of Chemistry
2	Course Title (< 45 characters)	Environmental Chemistry
3	L-T-P Structure	(4-0-0)
4	Credits	3.5
5	Course Number	CHM 805
6	Status (category for program)	Core
7	Status vis-à-vis other courses (give course number/title)	
7.1	Overlap with any UG/ PG course of Department/ Centre	No
7.2	Overlap with any UG/ PG course of other Department/ Centre	No
8	Frequency of offering	Every Semester
9	Faculty who will teach the course	Prof K M Kumari and Dr Radhika Singh
10	Will the course require visiting faculty?	No
11	Course objectives (about 50 words) indicating motivation and aims	Environmental Chemistry provides the knowledge of Energy and Environment, Hydrosphere, Atmosphere, Lithosphere and Monitoring and Management of water Pollution.

EXISTING	PROPOSED	JUSTIFICATION
CHM 805		
<p data-bbox="168 302 646 357">UNIT 5: MONITORING AND MANAGEMENT OF WATER POLLUTANTS [11 pds]</p> <p data-bbox="168 441 646 525">Methods of monitoring, effluent standard, waste water treatment, primary, secondary and tertiary treatment, advanced treatment, sludge treatment.</p>	<p data-bbox="672 302 1055 357">Biodegradation of waste has been added. Remaining Unit is same.</p>	<p data-bbox="1075 302 1367 420">Biodegradation of wastes is included in the secondary treatment which further reduces the B.O.D of the effluent.</p>

1	Department/Centre proposing the course	Department of Chemistry
2	Course Title (< 45 characters)	Chemistry for Bio-Systems
3	L-T-P Structure	(4-0-0)
4	Credits	4
5	Course Number	CHM 903
6	Status (category for program)	Core

Course Template

7	Status vis-à-vis other courses (give course number/title)	
7.1	Overlap with any UG/ PG course of Department/ Centre	No
7.2	Overlap with any UG/ PG course of other Department/ Centre	No
8	Frequency of offering	Every Semester
9	Faculty who will teach the course	Prof K M Kumari and Dr Radhika Singh
10	Will the course require visiting faculty?	No
11	Course objectives (about 50 words) indicating motivation and aims	Chemistry for Bio-Systems provides the knowledge of Bioenergetics and Transport, Metabolism, Enzymes, Tools of Cell biology and Bioinorganic Chemistry.

EXISTING	PROPOSED	JUSTIFICATION
CHM 903		
SUGGESTED READINGS: Lehninger AL: Principles of Biochemistry, Nelson & Cox (2004). Harper: Principles of Physiology, Hardcover Publisher (1990). Gilvery RW and Gerald Goldstein: Biochemistry: A functional approach, WB Saunders Co. (1983).	SUGGESTED READINGS: List of suggested readings have been updated in the existing syllabus. 1. Biochemistry by Jeremy M. Berg, John L. Tymoczko, Lubert Stryer, W H Freeman & Co Ltd, 2007, New York 2. Fundamentals of Biochemistry: Life at the Molecular Level	Upgradation of Suggested Readings

<p>Cohn and Stumph: Outline of Biochemistry, Wiley Eastern (2000).</p> <p>Zubay G: Biochemistry, Wm. C. Brown Publishers (1993).</p> <p>Lipard SJ and Berg JM: Principles of Bioinorganic Chemistry, University Science Books, Mill Valley, CA, USA (1998).</p>	<p><u>Donald Voet</u>, <u>Judith G. Voet</u>, <u>Charlotte W. Pratt</u>, John Wiley & Sons, 2012</p> <p>3. Lehninger Principles of Biochemistry, <u>David Lee Nelson</u>, <u>Michael M. Cox</u>, W.H. Freeman, 2013</p>	
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