ACADEMIC CALENDAR
DEPT- CHEMISTRY
SESSION- 2017-18

Session	Topic	Remarks
B.Sc Part-I (1st Year) Chemistry (Honours) Term 1,Half 1, (July-October)	**CEMAT 12-PA** Kinetic Theory of Gases--- Upto Binary Collision, Wall Collision **CEMAT 12-PB** Thermodynamics 1---------- Upto Free expansion of ideal gas **CEMAT 11-1A** Radio Activity –Full Atomic Structure – Upto Quantum numbers Chemical Periodicity : Complete **CEMAP 12-Pr B: Inorganic Practical** **Practical Inorganic** 1) Determination of hardness of water (by EDTA). 2) Estimation of vitamin-C (Iodometry). **Practical Organic Experiment** **1a. Preparation of suitable derivative** **b. M.P. of derivative** **2. Qualitative chemical test for all special elements and functional groups in unknown organic compounds.** **CEMAT 11-OA- Unit 1** Nomenclature to nucleophilicity, Conformation **Unit II R,S** nomenclature Reaction Kinetics Upto primary kinetic isotope effect.	4 weeks Puja Vacation Mid term

Term 1,Half 2 (November-December)	**CEMAT 12-PA** **Gas—real gas** **CEMAT 12-PB** 2 nd law of Thermodynamics ---------- Upto Maxwell relations **CEMAT 11-1A** Atomic Structure – Full **CEMAT 11-1B** Chemical Bonding and Structure: Ionic Bonding **CEMAT 11-OA- Unit 1** **CEMAT 11-OA- Unit 1** Elimination Reactions Alcohol and ethers **CEMAT 11-OB-** Aromatic electrophilic substitution **-Complete** **CEMAP 12-PrA-** **1a. Preparation of suitable derivative** **b. M.P. of derivative** **2. Qualitative chemical test for all special elements and functional groups in unknown organic compounds.** **CEMAP 12-PrB-** 1) Estimation of i) NH_4^+ 2) Estimation of available oxygen in pyrolusite.	1 week winter Recess Annual Sports.

Term 2, Half 1 (January- March)	**CEMAT 12-PA** **Liquid State** **CEMAT 12-PB** Chemical Kinetics upto Lindemann Theory **CEMAT 11-1B** Chemical Bonding and Structure: Covalent Bonding- Full. Acid-base Reaction: Upto HSAB Principle **CEMAT 11-OB-** Revision Classes & exercises **CEMAP 12-PrB-** 1) Estimation of Cu(II) – iodometric. 2) Estimation of Fe(III) – after reduction (Dichromatometry).	Pre Test- January Test-February
Term 2, Half 2 (April-June)	Revision work	Summer Recess 6 Wk

ACADEMIC CALENDAR

SESSION 2017-18

DEPT- CHEMISTRY

2ND YEAR HONOURS

Session	Topic	Remarks
Term 1,Half 1, (August-October)	**CEMAT 23-OA** **CEMAT 24-PA** Black Body radiation upto Wave particle Duality **CEMAT 24-PB** Thermodynamics II---------- Upto Clausius – Clapeyron equation. **CEMAT 23-1A** Other types of Bonding Hydrogen Bonding and Metallic Bonding, Homonuclear Molecular Orbital Theory Chemical Periodicity : II s-block elements: Li-Na-K, Be-Mg-Ca-Sr-Ba. (ii) p-block elements: B-Al-Ga-In-Tl, C-Si-Ge-Sn-Pb, **CEMAP 24-Pr B:** Analysis of known acid and basic radicals **CEMAT 23-OA- Unit 1** UV and IR Spectroscopy **CEMAP 24-Pr A** 1. Determination of surface tension of a given solution by the drop weight method using a	4 weeks Puja Vacation Mid-Term Exam

	stalagmometer, considering aqueous solutions of NaCl, acetic acid, ethanol etc, as systems. 2. Determination of viscosity coefficient of a given solution with Ostwald's viscometer considering aqueous solutions of cane-sugar, glycerol, ethanol, etc.	
Term 1,Half 2 (October-December)	**CEMAT 24-PA** Quantum Chemisatry continued upto Postulates of Quantum Mechanics **CEMAT 24-PB** Thermodynamics II---------- Upto La Chateliers Principle **CEMAT 23-1A** Other types of Bonding Rest of Molecular Orbital Theory & Co-ordination Theory Chemical Periodicity : II .p-block elements: iii) N-P-As-Sb-Bi iv) O-S-Se-Te v) F-Cl-Br-I **CEMAP 24-Pr B:** Analysis of known insoluble residue, aquaregian extract+ separation of allied radicals **CEMAT 23-OA- Unit 1** Mass: Basic principle of mass spectroscopy, **^{1}H-NMR** **CEMAT 23-OA- Unit 1I** Phenol upto Cumene-phenol rearrangement. **CEMAP 24-Pr A** 1. Determination of solubility of sparingly soluble salts in water and various Electrolyte medium by titrimetric method. KHTa as sparingly soluble salt in water, KCl, $NaNO_3$ may	1 week winter Recess Annual Sports. NSS Camp

	be used. .	
Term 2, Half 1 (January- March)	**CEMAT 24-PA** Quantum Chemisatry particle in a box and simple harmonic oscillator **CEMAT 24-PB** Electro chemistry I upto Conductometric Titration and Electrochemical Cells **CEMAT 23-1A** Redox Reactions –upto redox potential Diagram **CEMAP 24-Pr B:** Qualitative Analysis of six unknown Inorganic Samples **CEMAT 23-OB-** Chemistry of carbonyl compounds----------complete Carboxylic Acids **CEMAP 24-Pr A** 1. Determination of the equilibrium constant of the reaction $KI + I_2 = KI_3$ by partition method (partition coefficient to be supplied). 2. Determination of pH of an unknown buffer solution by colour matching.	Test examination

Term 2, Half 2 (April-June)	**CEMAT 24-PA** Quantum Chemisatry H atom, Pot. Energy curve, radiative, non radiative processes **CEMAT 24-PB** Electro chemistry II Nernst equation, Standard electrode potential upto salt hydrolysis **CEMAT 24-PA** Laws of photochemistry **CEMAT 23-1A** Redox Reactions : rest **CEMAP 24-Pr B:** Qualitative Analysis of twounknown Inorganic Samples **CEMAT 23-OB-** Organometallic compounds: Preparation and synthetic applications of organomagnesium, organolithium, organozinc, organocopper, use of TMSCl, TMSI, TMSCN **CEMAP 24-Pr A** 1 Determination of pH of an unknown buffer solution by colour matching.	Remedial Classes Summer Recess 6 Wk

ACADEMIC CALENDAR -2017-18

DEPARTMENT of CHEMISTRY

3rd Year Honours

Session	Topic	Remarks
Term 1,Half 1, (July-October)	**CEMAT 36-PA** Statistical Thermodynamics upto derivation of thermodynamic functions using partition function. **CEMAT 36-PA Unit II** Molecular Spectroscopy upto rotational spectroscopy **CEMAT 35 IA** Chemistry of coordination compounds-VBT, CFT and Isomerism, Application of CFT Chemistry of d block and f block elements ----full. **CEMAT 36 OA** Heterocyclic compounds and pharmaceuticals **CEMAP 37-Pr** 1 Preparation of an organic compound, purification and determination of its M.P., Nitration (cold, hot), Condensation, Hydrolysis, Oxidation, **CEMAP 37-Pr** 1. To study the kinetics of inversion of sucrose using polarimeter. 2. To study the phase diagram of a binary system (Phenol + water) and the effect of impurities (e.g. NaCl).	4 weeks Puja Vacation

	3. Determination of ionization constant of a weak acid by conductometric method. 4. To study the kinetics of saponification of ester by conductometric method. **CEMAP 38-Pr** 1) Complexometric estimation: i) (Ca^{2+} + Mg^{2+}) in solution. ii)(Fe^{3+} + Al^{3+}) in solution. 2) Dichromatometry and iodometry: i) Fe^{3+} + $Cr_2O_7^{2-}$ ii) Fe^{3+} + Cu^{2+} iii) Fe^{3+} + Mn^{2+}.	

Term 1,Half 2 (November-December)	**CEMAT 36-PA** 3rd law of thermodynamics, Raman Spectroscopy **CEMAT 36-PB** Phase Equilibrium, Colligative properties **CEMAT 35 IA** Chemistry of coordination compounds- Complete **CEMAT 35 IB** **Organometallic compounds- Full** **Gravimetric and titrimetric analysis : Full** **CEMAT 36 OB** Streochemistry of cyclohexanes Carbohydrates, Pericyclic Reaction **CEMAP 38-Pr** 1 Preparation of an organic compound, purification and determination of its M.P., Halogenation (Green method), acetylation. **CEMAP 37-Pr** 1. Identification of amino acids by TLC/paper. 2. Conductometric titration of HCl vs NaOH, AcOH vs NaOH. 3. Determination of formal potential of Fe^{+3}/Fe^{+2} couple in the hydrogen scale by potentiometric titration of ferrous ammonium sulfate solution using $KMnO_4$, or, $K_2Cr_2O_7$ as standard. 4. Determination of concentration of (i) $AgNO_3$ solution and (ii) solubility product of AgCl by potentiometic titration of standard KCl solution against $AgNO_3$ solution. 5. Determination of pK values of weak	1 week winter Recess Annual Sports. NSS Camp

	monobasic, dibasic and polybasic acid by pH-metric method (e.g. using, acetic acid, succinic acid, oxalic acid, phosphoric acid, etc.). **CEMAP 38-Pr** 3) Permanganometry: Fe^{3+} + Ca^{2+}. 4) Analysis of Fe^{3+} in cement. 5) Gravimetry: i) Ni^{2+} as glyoximato complex.	
Term 2, Half 1 (January- March)	**CEMAT 36PB** Unit-I : Properties of Solid, interface and dielectrics Langmur Adsorption Isotherm **CEMAT 35 AA** Bioinorganic Chemistry-------- Full Material Chemistry----------Full **EMAT 35 IB** Organometallic compounds- Full Gravimetric and titrimetric analysis : Full **CEMAT 36 OB** Amino acids , Alkaloids, Natural Products, Organic Synthesis **CEMAP 37-Pr** 9. Study of the kinetics of the reaction I^- + $S_2O_8^{-2}$ by colorimetric method. 10. Determination of ^o of a strong electrolyte	Test examination

	(KCl) conductometrically. 11. Determination of specific rotation of an optically active substance. 12. Determination of indicator constant by colourimetric method. 13. Verification of Lambert Beer's Law. 14. Conductometric titration of mixed acid. Binary mixture separation (neutral + acid or base) and identification by TLC/Paper. **CEMAP 38-Pr** 5) Gravimetry: i ii) Cu^{2+} as CuSCN. 6) Determination of temporary and permanent hardness in supplied water.	
Term 2, Half 2 (April-June)		Summer Recess 6 Wk

ACADEMIC CALENDAR -2017-18

DEPARTMENT of CHEMISTRY

1st Year General

Session	Topic	Remarks
Term 1,Half 1, (July-October)	**CEMGT 11A: UNIT-1** a) Gaseous state: Kinetic theory of gas upto van der Waals equation of state b) Liquid state: Physical properties of liquids and their measurements: surface tension and viscosity. **CEMGT 11C: UNIT-1** a) Inductive effect, resonance and resonance energy. Homolytic and heterolytic bond breaking, b) Alkanes, alkenes and alkynes: Complete c) Aromatic Hydrocarbons: Structure of benzene, **CEMGT 11B: UNIT-1&II** Extra-nuclear Structure of atoms ----Full Radioactivity and Nuclear Structure of Atoms---Full Unit II: Principles of organic and Inorganic qualitative analysis	4 weeks Puja Vacation Mid Term Exam

Term 1,Half 2 (November-December)	**CEMGT 11A: UNIT-1** a)Gaseous state: Critical constants c) Crystalline state: **CEMGT 11D** **Unit I. Basic inorganic chemistry I** Ionic bonding, Covalent bonding, Fajan's rules. Hydrogen bonding and its effect on physical and chemical properties. **CEMGT 11C: UNIT-1I** a) Stereochemistry of carbon compounds: b) Alkyl and Aryl halides: SN1, SN2, E1 and E2 reactions (elementary mechanistic aspects), Saytzeff and Hoffmann elimination reactions. Nucleophilic aromatic substitution. **CEMGP 23A** **PRACTICAL** Qualitative Analysis of Single Organic Compound (Solid)	1 week winter Recess Annual Sports. NSS Camp

Term 2, Half 1 (January- March)	**CEMGT 11A: UNIT-1I** a)Themodynamics Complete **CEMGT 11D** **Unit I. Basic inorganic chemistry II** Chemical Periodicity: Full Comparative study of p-block elements: Full **CEMGT 11C: UNIT-1I** c) Alcohol and Ether : Method of synthesis , physical properties , distinction of primary, secondary and tertiary alcohol and their chemical reactions and uses of ethers . d) Organometallic compounds: Grignard reagents – preparations and reactions, application of Grignard reagents in organic synthesis. [1^0, 2^0 and 3^0 alcohols, aldehydes, ketones and carboxylic acids.] **CEMGP 23A** **PRACTICAL** Qualitative Analysis of Single Unknown Organic Compound (Solid)	Pre-Test Exam Test Exam
Term 2, Half 2 (April-June)	**Revision**	Test examination Summer Recess 6 Wk

ACADEMIC CALENDAR -2017-18

DEPARTMENT of CHEMISTRY

2nd Year General

Session	Topic	Remarks
B.Sc Part-II (2nd Year) Chemistry (General) Term 1,Half 1, (August-October)	**CEMGT 22A Unit-1** Thermodynamics II: upto Carnot Cycle **CEMGT 22B Unit-1** Acids and Bases **CEMGT 22D Unit-1** **Unit I. Basic inorganic chemistry III** Coordinate bonds and Coordination compounds: **CEMGT 22C Unit-1** Aldehydes and ketones) Carboxylic acids and their derivatives:	4 weeks Puja Vacation Mid Term Exam

Term 1,Half 2 (November-December)	**CEMGT 22A Unit-1** Thermodynamics II: (a) Spontaneous processes, (b) Chemical equilibrium: **CEMGT 22B Unit-1** (a) Solutions of electrolytes: b) Electrode potential: **CEMGT 22D Unit-1** **Unit I. Basic inorganic chemistry III** Preparation and uses of the some compounds **CEMGT 22C Unit-1** Carbohydrates: **CEMGP 23B (50Marks)** <u>Qualitative Analysis of Inorganic Mixtures</u> Experiments A: Preliminary Tests for Acid and Basic radicals in given samples.	1 week winter Recess Annual Sports. NSS Camp
Term 2, Half 1 (January- March)	**CEMGT 22A Unit-1** (c) Phase equilibrium Chemical kinetics **CEMGT 22B Unit-1** (a) Solutions of non-electrolytes: Colligative properties of solution **CEMGT 22D Unit-1** **Unit I. Basic inorganic chemistry III**	Test Examination

	Comparative study of s-block elements: chemical properties and reactions in respect of the following group elements: i) Li-Na-K ii) Be-Mg-Ca-Sr-Ba Extraction and purification of elements from natural sources: Li, Cr, Ni, Ag, Au. Electroplating, galvanizing and anodizing. **CEMGT 22C Unit-1** a) Phenols: synthesis, acidic character and chemical reactions of phenols, Kolbe reactions, Reimer-Tiemann reaction, Fries rearrangement, Claisen rearrangement. b) Organic compounds containing nitrogen: **CEMGP 23B (50Marks)** <u>Qualitative Analysis of Inorganic Mixtures</u> Experiments B: Wet tests for Acid and Basic radicals in given samples. Experiments C: Confirmatory tests.	
Term 2, Half 2 (April-June)	**CEMGT 22B Unit-1I** (b) Colloids: Colloids and crystalloids **CEMGT 22A Unit-1I** Catalysis & Photochemistry **CEMGT 22C Unit-1I** Amino acids, Proteins: **CEMGP 23B (50Marks)** Qualitative Analysis of Inorganic UnknownMixtures	Remedial Classes Summer Recess 6 Wk

ACADEMIC CALENDAR -2017-18

DEPARTMENT of CHEMISTRY

3rd Year General

Term 1,Half 1, (July-October)	**CEMGT 34A Unit-1** **Unit I. Chemical analysis** Gravimetric Analysis: Solubility product and common ion effect. Requirements of gravimetry. Gravimetric estimation of chloride, sulphate, lead, barium and nickel. **Error analysis and computer applications** **Unit II: Volumetric Analysis** **CEMGT 34B** **Unit I. Industrial chemistry I** a) Fuels: b) Fertilizers: c) Glass and Ceramics: **Unit II. Industrial chemistry II** a) Polymers: . b) Paints, Varnishes and Synthetic Dyes: green, Crystal violet. c) Drugs and pharmaceuticals: Fermentation Chemicals: **CEMGP 34D** **Quantitative Chemical Analysis**	4 weeks Puja Vacation

	(25 Marks) Experiment –I. Preparation of standard (N/20) solution of oxalic acid and standardization of (a) NaOH solution (b) $KMnO_4$ solution (c) Mohr's salt solution (against $KMnO_4$). Experiment –II. Preparation of standard (N/20) $K_2Cr_2O_7$ solution of oxalic acid and standardization of (a) Mohr's salt solution (b) $KMnO_4$ solution (c) sodium thiosulphate solution.	
Term 1,Half 2 (October-December)	**CEMGT 34C** **Unit I. Environmental chemistry** (12 Marks) The Atmosphere: The Hydrosphere : The Lithosphere: **CEMGP 34D** **Quantitative Chemical Analysis** Experiment –III. Preparation of standard (M/50) Zinc acetate solution and (a) standardization of Na_2EDTA solution and (b) Estimation of unknown solution of single metal ion (Zn^{2+}/Ca^{2+}/Mg^{2+}). Experiment –IV. Acidimetric estimation of $NaHCO_3$, Na_2CO_3 mixture using phenolphthalein and methyl orange.	1 week winter Recess Annual Sports. NSS Camp

Term 2, Half 1 (January- March)	**CEMGT 34B** **Unit II. Industrial Chemistry III** Fats-Oils-Detergents : Pesticides: Food Additives: **CEMGP 34D** **Quantitative Chemical Analysis** **(25 Marks)** Experiment –V. Alkalimetric estimation of HCl, CH_3COOH mixture Experiment –VI. Estimation of Fe (II) + Fe (III) mixture using standard (N/20) solution of (a) $K_2Cr_2O_7$ (b) $KMnO_4$ as titrants. Experiment –VII. Estimation of total hardness of water (EDTA method). Experiment –VIII. Estimation of Vitamin C by iodometric method. Experiment –IX. Estimation of available oxygen in pyrolusite.	Test examination
Term 2, Half 2 (April-June)		

MONTH	SUNDAYS	HOLIDAYS	SYLLABUS TO BE COVERED
July 18	01, 08, 15, 22, 29	14- RATHYATRA	**1st Year: Unit 1 (*CEMACOR01T)*** ***Unit 3 (CEMACOR01P)*** **Unit 1, 2 (*CEMACOR02T)*** ***Experiment 1 (CEMACOR02P)*** **Section A, Unit 1 (CEMGCOR01T)** **Section** B **(CEMGCOR01P)**
August 18	05, 12, 19, 26	10- College Foundation Day 15- Independence Day 22- Eid-Uj-Zoha 26- RakshaBandhan	**1st Year: Unit 1 (*CEMACOR01T)*** ***Unit 1 (CEMACOR01P)*** **Unit 1, 2 (*CEMACOR02T)*** ***Experiment 3(CEMACOR02P)*** **Section A, Unit 2, 4 (CEMGCOR01T)** **Section** B**, Unit 1, 2 (CEMGCOR01T)** **Section** A, ***Experiment 2*** **(CEMGCOR01P)** **Section** B **(CEMGCOR01P)**
September 18	02, 09, 16, 23, 30	03- Janmashtami 17- Bishwakarma Puja 21- Muharram	**1st Year: Unit 2, Unit 3 (*CEMACOR01T)*** ***Unit 1, 3 (CEMACOR01P)*** **Unit 2, 3 (*CEMACOR02T)*** ***Experiment 4(CEMACOR02P)*** **Section A, Unit 3, 4 (CEMGCOR01T)** **Section** B**, Unit 2, 3 (CEMGCOR01T)** **Section** A, ***Experiment 4, 3*** **(CEMGCOR01P)** **Section** B **(CEMGCOR01P)** **Mid-Term Exam**
October 18	07, 14, 21, 28	02- Gandhi Birthday 08- Mahalaya 15 to 25- Puja Holidays including Laxmi Puja	**1st Year: Unit 3 (*CEMACOR01T)*** ***Unit 1, 3 (CEMACOR01P)*** **Unit 2 (*CEMACOR02T)*** ***Experiment 2(CEMACOR02P)*** **Section A, Unit 3 (CEMGCOR01T)** **Section** B**, Unit 4 (CEMGCOR01T)** **Section** A, ***Experiment 5*** **(CEMGCOR01P)** **Section** B **(CEMGCOR01P)** **Test Exam** **Internal Assessment 1 Test**
November 18	04, 11, 18, 25	05 to 08- Kali Puja/Deepawali 09- Bhatridwitiya 13- Chhat Puja 17- Jagadhatri Puja 21- FatehDoazDaham 23- Guru Nanak Birthday	**1st Year: Unit 3 (*CEMACOR01T)*** ***Unit 2 (CEMACOR01P)*** **Unit 2, 3 (*CEMACOR02T)*** ***Experiment 2, 5(CEMACOR02P)*** **Section A, Unit 3 (CEMGCOR01T)** **Section** B**, Unit 4 (CEMGCOR01T)** **Section** A, ***Experiment 1*** **(CEMGCOR01P)** **Section** B **(CEMGCOR01P)** **Overall revision** **Internal Assessment 2 Test**

December 18	02, 09, 16, 23, 30	25- Christmas Day	**1st Year: Revision** **End Semester 1 Exam**
January 19	06, 13, 20, 27	01- New Year Day 12- Vivekananda's Birthday 15- PoushParbon 23- Netaji's Birthday 25- Maghotsav 26- Republic Day	**1st Year: Unit 1 (*CEMACOR03T)*** ***Experiment 1, 2, Unit 1(CEMACOR01P)*** **Unit 1 (CEMACOR04T)** **Section A (CEMACOR04P)**
February 19	03, 10, 17, 24	10- Saraswati Puja 11- Niranjan of Saraswati idol 25- West Bengal State University Foundation Day	**1st Year: Unit 2 (*CEMACOR03T)*** ***Experiment 3(Unit 1), Experiment 1,2 (Unit 2)(CEMACOR01P)*** **Unit 2 (CEMACOR04T)** **Section A (CEMACOR04P)** **Internal Assessment 1 Test**
March 19	03, 10, 17, 24, 31	04- MahaShivratri 21- DolYatra 22- Holi	**1st Year: Unit 3 (*CEMACOR03T)*** ***Experiment 3,4 (Unit 2)(CEMACOR01P)*** **Unit 2, 3 (CEMACOR04T)** **Section B (CEMACOR04P)** **Mid-term Exam**
April 19	07, 14, 21, 28	14- ChaitraSankranti/ Ambedkar Birthday 15- Bengali New Year 17- MahavirJayanti 19- Good Friday 20- Easter 21- Shab-e-Barat	**1st Year: Unit 4 (*CEMACOR03T)*** ***Experiment 5,6 (Unit 2)(CEMACOR01P)*** **Unit 3 (CEMACOR04T)** **Section C (CEMACOR04P)** **Test Exam**
May 19	06, 13, 20, 27	01-May Day 07- RabindraJayanti 18- Buddha Purnima	**1st Year: Remaining parts to be completed.** **Overall Revision.** **Internal Assessment 2 Test**
June 19	03, 10, 17, 24	05- Eid-uj-Zoha 30- Summer Recess ends	**End Semester 2 Exam**

2019-2020 Academic Calendar

Department of Chemistry

Semester	Syllabus Module/Unit	Topic	No. of lectures (Hours)	Teachers	Distribution
1st semester (H)	Bonding and physical properties(CEMACORET1)	1. Valance Bond Theory 2. Electronic Displacement 3. MO Theory 4. Physical properties	25L	AD	12 WEEKS
	General Treatment of Reaction Mechanism (CEMACORE01T)	1. Mechanistic classification 2. Reactive intermediates	10L	DC	6 WEEKS
	Stereochemistry I (CEMACORE01T)	1. Concept of chirality and symmetry 2. Relative and absolute configuration 3. Optical activity of chiral compounds	25L	DC	12 WEEKS
	Organic chemistry I (Lab) (CEMACORE 01P)	1. Separation 2. Determination of boiling point 3. Identification of a pure Organic compound	60L	DC/AD	24 WEEKS
	Physical Chemistry-I Kinetic Theory and Gaseous State (CEMACORE02T)	1. Kinetic Theory of gases 2. Maxwell's distribution of speed and energy 3. Real gas and virial equation	20L	AB/SB	12 WEEKS
	Chemical Thermodynamics (CEMACORE02T)	1. Zeroth and 1st law of thermodynamics 2. Thermochemistry 3. 2nd law	25L	AB	14 WEEKS
	Chemical Kinetics (CEMACORE02T)	1. Rate law, order and molecularity 2. Role of T and theories of reaction rate 3. Homogeneous catalysis	15L	SB	12 WEEKS
	Physical Chemistry -I Lab (CEMACOR02P)	1. Experiment 1 2. Experiment 3 3. Experiment 4	60L	AB/SB	24 WEEKS

Semester	Syllabus Module/Unit	Topic	No of lectures (Hours)	Teachers	Distribution
1st Semester (G)	Section A: Inorganic Chemistry-I (CEMGCORE01T)	1. Atomic structure 2. Chemical periodicity 3. Acids and bases 4. Redox reaction	30L	SB/AB/AD	15 WEEKS
	Section B: Organic Chemistry- I (CEMGCORE01T)	1. Fundamentals of organic chemistry 2. Stereochemistry 3. Nucleophilic substitution and Elimination reaction 4. Aliphatic Hydrocarbons	30L	DC	15 WEEKS
	Hydrocarbons Lab (CEMGCORE01P)	Inorganic Chemistry lab	30L	AB/SB	12 WEEKS
	Hydrocarbons Lab (CEMGCORE01P)	Organic chemistry lab	30L	DC/AD	12 WEEKS

Semester	Syllabus Module/Unit	Topic	No of lectures (Hours)	Teachers	Distribution
3rd Semester (G)	Section A: Physical Chemistry-II (CEMGCORE03T	1. Chemical Energetics 2. Chemical Equilibrium	30L	AB/SB	12 WEEKS

	)	3. Ionic Equilibrium			
	Section B: Organic Chemistry -II (CEMGCORE03T	1. Aromatic Hydrocarbons 2. Organometallic compounds 3. Aryl Halides 4. Alcohols, Phenols and Ethers 5. Carbonyl Compounds	30L	DC/AD	12 WEEKS
	Section A: Physical Chemistry Lab (CEMGCORE03P)	Ionic Equilibria	30L	AB/SB	12 WEEKS
	Section B: Organic Chemistry Lab (CEMGCORE03P)	Identification of a pure organic compound	30L	DC/AD	12 WEEKS

Semester	Syllabus Module/Unit	Topic	No of lectures (Hours)	Teachers	Distribution
5th semester (H)	Advanced physical chemistry : Crystal Structure (CEMADSE01T)	1. Bravais Lattice and Laws of Crystallography 2. Crystal planes	20L	SB	6 WEEKS
	Statistical Thermodynamics (CEMADSE01T)	1. Configuration 2. Boltzmann distribution 3. Partition function	20L	AB	6 WEEKS
	Special selected topics (CEMADSE01T)	1. Specific heat of solid 2. 3rd law 3. Polymers	20L	SB/AB	6 WEEKS
	Advanced	Computer programs based on	60L	AB	24

	Physical Chemistry Lab (CEMADSE01 P)	numerical methods			WEEKS
	Analytical methods in chemistry: Qualitative and quantitative aspects of analysis (CEMADSE02 T)	Qualitative and quantitative aspects of analysis	05L	AB	1 WEEK
	Optical methods of analysis (CEMADSE02 T)	1. UV-Visible spectroscopy 2. Flame atomic absorption and emission spectroscopy	25L	DC/AB	3 WEEKS
	Thermal methods of analysis (CEMADSE02 T)	Thermogravimetry	05L	GK	1 WEEK
	Electroanalytical methods (CEMADSE02 T)	Electroanalytical methods	10L	AB	2 WEEKS
	Separation techniques (CEMADSE02 T)	1. Solvent extraction 2. Mechanism of extraction 3. Chromatography	15L	DC/AD	3 WEEKS
	Analytical methods in chemistry-Lab (CEMADSE02 P)	1. Separation Technique 2. Solvent Extraction 3. Spectrophotometry	60L	AB/DC /AD/SB /GK	24 WEEKS
	Inorganic Chemistry- IV (CEMACOR11 T)	1. Coordination chemistry -II	36L	SB	24 WEEKS
	Inorganic Chemistry- IV (CEMACOR11 T)	1. Lanthanoids and Actinoids	24L	GK	15 WEEKS
	Inorganic Chemistry-IV Lab (CEMACOR11 P)	1. Chromatography of metal ions 2. Gravimetry 3. Spectrophotometry	60L	GK	24 WEEKS
	Organic	1.Polynuclear hydrocarbons and	16L	AD	6

	Chemistry-IV (CEMACOR12T) Carbocycles and Heterocycles	their derivatives 2.Heterocyclic compounds			WEEKS
	Cyclic Stereochemistry (CEMACOR12T)	Alicyclic Compounds	10L	AD	4 WEEKS
	Carbohydrates (CEMACOR12T)	Monosaccharides	14L	DC	6 WEEKS
	Pericyclic reactions (CEMACORE 12T)	Pericyclic reactions	8L	DC	4 WEEKS
	Biomolecules (CEMACORE 12T)	1. Amino acids 2. Peptides 3. Nucleic acids	12L	DC	5 WEEKS
	Organic Chemistry-V Lab (CEMACORE 12P	1. Chromatographic Separation 2. Spectroscopic Analysis of organic compounds	60L	DC/AD	24 WEEKS

Semester	Syllabus Module/Unit	Topic	No of lectures (Hours)	Teachers	Distribution
5th semester (G)	Polymer chemistry (CEMGDSE01T)	1. Introduction and history of polymer chemistry 2. Functionality and its importance 3. Kinetics of polymerization 4. Crystallization and crystallinity 5. Nature and structure of polymers 6. Determination of molecular weight of	60L	AB/DC	24 WEEKS

		polymers 7. Polymer solution 8. Properties of polymers			
	Polymer chemistry (CEMGDSE01P)	1. Polymer synthesis 2. Polymer characterization 3. Polymer analysis	60L	DC/GK	24 WEEKS
	Green chemistry (CEMGDSE02T)	1. Introduction to green chemistry 2. Principles of green chemistry and designing a chemical synthesis 3.Example ofgreen synthesis/ reactions and some real world cases 4. Future trends in green chemistry	60L	DC/AD	24 WEEKS
	Green chemistry (CEMGDSE02P)	1. Avoiding waste 2. Alternative green solvent 3. Alternative sources of energy	60L	DC/AD	24 WEEKS

Academic Calendar 2020-2021

Department of Chemistry

Semester	Syllabus Module/Unit	Topic	No. of lectures (Hours)	Teachers	Distribution
1st semester (H)	Bonding and physical properties(CEMACORET1)	1. Valance Bond Theory 2. Electronic Displacement 3. MO Theory 4. Physical properties	25L	AD	6 weeks
	General Treatment of Reaction Mechanism (CEMACORE01T)	1. Mechanistic classification 2. Reactive intermediates	10L	DC	4 weeks
	Stereochemistry I (CEMACORE01T)	1. Concept of chirality and symmetry 2. Relative and absolute configuration 3. Optical activity of chiral compounds	25L	DC	6 weeks
	Organic chemistry I (Lab) (CEMACORE 01P)	1. Separation 2. Determination of boiling point 3. Identification of a pure Organic compound	60L	DC + AD	20 weeks
	Physical Chemistry-I Kinetic Theory and Gaseous State (CEMACORE02T)	1. Kinetic Theory of gases 2. Maxwell's distribution of speed and energy 3. Real gas and virial equation	20L	SB	5 weeks
	Chemical Thermodynamics (CEMACORE02T)	1. Zeroth and 1st law of thermodynamics 2. Thermochemistry 3. 2nd law	25L	AB	6 weeks
	Chemical Kinetics (CEMACORE02T)	1. Rate law, order and molecularity 2. Role of T and theories of reaction rate 3. Homogeneous catalysis	15L	SB	4 weeks
	Physical Chemistry -I Lab (CEMACOR02P)	1. Experiment 1-5	60L	SB+AB	20 weeks

Semester	Syllabus Module/Unit	Topic	No of lectures (Hours)	Teachers	Distribution
1st Semester (G)	Section A: Inorganic Chemistry-I (CEMGCORE01T)	1. Atomic structure 2. Chemical periodicity 3. Acids and bases 4. Redox reaction	30L	SB+AB	8 weeks
	Section B: Organic Chemistry- I (CEMGCORE01T)	1. Fundamentals of organic chemistry 2. Stereochemistry 3. Nucleophilic substitution and Elimination reaction 4. Aliphatic Hydrocarbons	30L	DC + AD	8 weeks
	Hydrocarbons Lab (CEMGCORE01P)	Inorganic Chemistry lab	30L	SB	8 weeks
	Hydrocarbons Lab (CEMGCORE01P)	Organic chemistry lab	30L	DC + AD	8 weeks

Semester	Syllabus Module/Unit	Topic	No of lectures (Hours)	Teachers	Distribution
3rd semester (H)	Physical Chemistry -II Transport Process (CEMACOR05T)	1. Ficks Law 2. Viscosity 3. Conductance and transport number	15L	AB	5 weeks
	Application of Thermodynamics-I (CEMACOR05T)	1. Partial properties and chemical potential 1. Chemi Experiment 1 2. cal Equilibrium	25L	AB+SB	6 weeks

		3. Chemical potential and other properties			
	Foundation of Quantum Mechanics (CEMACOR05T)	1. Beginning of Quantum mechanics 2. Wave function 3. Concept of Operators 4. Particle in a Box 5. Simple Harmonic Oscillator	20 L	SB	5 weeks
	Physical Chemistry lab-II (CEMACOR05P)	1. Experiment 1 2. Experiment 2 3. Experiment 3 4. Experiment 4 5. Experiment 5 6. Experiment 6	60L	SB+AB	20 weeks
	Inorganic Chemistry-II (CEMACOR06T) Chemical Bonding-I	1. Ionic Bond 2. Covalent Bond	24L	GK	6 weeks
	Chemical Bonding-II (CEMACOR06T)	1. MO concept of bonding 2. Metallic Bond 3. Weak Chemical Forces	24L	GK	6 weeks
	Radioactivity (CEMACOR06T)	Radioactivity	12L	GK	6 weeks
	Inorganic Chemistry-II Lab (CEMACOR06P)	Iodo/Iodimetric titration	60L	GK	20 weeks
	Organic Chemistry-III (CEMACOR07T)	Chemistry of alkenes and alkynes	15L	DC	8 weeks
	Organic Chemistry-III (CEMACOR07T)	Aromatic Substitution	10L	DC	4 weeks
	Organic Chemistry-III (CEMACOR07T)	Carbonyl and Related compounds	30L	AD	10 weeks

	Organic Chemistry-III (CEMACOR07T)	Organometallics	5L	AD	2 weeks
	Organic Chemistry-III Lab (CEMACOR07P)	Qualitative Analysis of Single Solid Organic Compounds	60L	DC + AD	20 weeks

Semester	Syllabus Module/Unit	Topic	No of lectures (Hours)	Teachers	Distribution
3rd Semester (G)	Section A: Physical Chemistry-II (CEMGCORE03T)	1. Chemical Energetics 2. Chemical Equilibrium 3. Ionic Equilibrium	30L		10 weeks
	Section B: Organic Chemistry -II (CEMGCORE03T	1. Aromatic Hydrocarbons 2. Organometallic compounds 3. Aryl Halides 4. Alcohols, Phenols and Ethers 5. Carbonyl Compounds	30L	DC + AD	10 weeks
	Section A: Physical Chemistry Lab (CEMGCORE03P)	Ionic Equilibria	30L		10 weeks
	Section B: Organic Chemistry Lab (CEMGCORE03P)	Identification of a pure organic compound	30L	DC + AD	10 weeks

Semester	Syllabus Module/Unit	Topic	No of lectures (Hours)	Teachers	Distribution

5th semester (H)	Advanced physical chemistry : Crystal Structure (CEMADSE01T)	1. Bravais Lattice and Laws of Crystallography 2. Crystal planes	20L	SB	8 weeks
	Statistical Thermodynamics (CEMADSE01T)	1. Configuration 2. Boltzmann distribution 3. Partition function	20L	AB	8 weeks
	Special selected topics (CEMADSE01T)	1. Specific heat of solid 2. 3rd law 3. Polymers	20L	AB/SB	8 weeks
	Advanced Physical Chemistry Lab (CEMADSE01P)	Computer programs based on numerical methods	60L	AB	20 weeks
	Analytical methods in chemistry: Qualitative and quantitative aspects of analysis (CEMADSE02T)	Qualitative and quantitative aspects of analysis	05L	AB	2 weeks
	Optical methods of analysis (CEMADSE02T)	1. UV-Visible spectroscopy 2. Flame atomic absorption and emission spectroscopy	25L	AB/GK	9 weeks
	Thermal methods of analysis (CEMADSE02T)	Thermogravimetry	05L	AD	2 weeks
	Electroanalytical methods (CEMADSE02T)	Electroanalytical methods	10L	AB	4 weeks
	Separation techniques (CEMADSE02T)	1. Solvent extraction 2. Mechanism of extraction 3. Chromatography	15L	AB/AD	6 weeks
	Analytical	1. Separation	60L	AB/AD	20 weeks

	methods in chemistry-Lab (CEMADSE02P)	Technique 2. Solvent Extraction 3. Spectrophotometry			
	Inorganic Chemistry- IV (CEMACOR11T)	1. Coordination chemistry - II	36L	GK	12 weeks
	Inorganic Chemistry- IV (CEMACOR11T)	1. Lanthanoids and Actinoids	24L	GK	9 weeks
	Inorganic Chemistry-IV Lab (CEMACOR11P)	1. Chromatography of metal ions 2. Gravimetry 3. Spectrophotometry	60L	GK	20 weeks
	Organic Chemistry-IV (CEMACOR12T) Carbocycles and Heterocycles	1.Polynuclear hydrocarbons and their derivatives 2.Heterocyclic compounds	16L	AD	6 weeks
	Cyclic Stereochemistry (CEMACOR12T)	Alicyclic Compounds	10L	AD	4 weeks
	Carbohydrates (CEMACOR12T)	Monosaccharides	14L	DC	6 weeks
	Pericyclic reactions (CEMACORE12T)	Pericyclic reactions	8L	DC	3 weeks
	Biomolecules (CEMACORE12T)	1. Amino acids 2. Peptides 3. Nucleic acids	12L	DC	5 weeks
	Organic Chemistry-V Lab (CEMACORE12P	1. Chromatographic Separation 2. Spectroscopic Analysis of organic compounds	60L	DC + AD	20 weeks

Semester	Syllabus Module/Unit	Topic	No of lectures	Teachers	Distribution

			(Hours)		
5th semester (G)	Polymer chemistry (CEMGDSE01T)	1. Introduction and history of polymer chemistry 2. Functionality and its importance 3. Kinetics of polymerization 4. Crystallization and crystallinity 5. Nature and structure of polymers 6. Determination of molecular weight of polymers 7. Polymer solution 8. Properties of polymers	60L	AB + DC	20 weeks
	Polymer chemistry (CEMGDSE01P)	1. Polymer synthesis 2. Polymer characterization 3. Polymer analysis	60L	AB+DC	20 weeks

ACADEMIC CALENDER 2020-2021(EVEN SEMESTER)

CHEMISTRY DEPARTMENT

Semester	Syllabus Module/Unit	Topic	No of Lectures (Hours)	Teachers	Distribution
2nd Semester (Honours)	Inorganic Chemistry-I (CEMACOR03T)	Extra nuclear structure of atom	18L	SNC/GK	6 WEEKS
	Inorganic Chemistry-I (CEMACOR03T)	Chemical periodicity	8L	SNC/GK	3 WEEKS
	Inorganic Chemistry-I (CEMACOR03T)	Acid-Base reaction	16L	AB	5 WEEKS
	Inorganic Chemistry-I (CEMAOR03T)	Redox Reaction and precipitation reaction	18L	AB/SB	6 WEEKS
	Inorganic Chemistry-I Lab (CEMACOR03P)	1. Acid Base titration 2. Oxidation Reduction titration	60L	AB	20 WEEKS
	Organic Chemistry-II (CEMACOR04T)	Stereochemistry-II	20L	DC	8 WEEKS
	Organic Chemistry-II (CEMACOR04T)	General Treatment of Reaction Mechanism II	22L	DC + AD	9 WEEKS
	Organic Chemistry-II (CEMACOR04T	Substitution and Elimination Reaction	18L	AD	6 WEEKS
	Organic Chemistry-II Lab (CEMACOR04P)	Organic Preparations	60L	DC + AD	20 WEEKS

Semester	Syllabus	Topic	No of	Teachers	Distributions

	Module/Unit		Lectures (Hours)		
2nd Semester (General)	Physical Chemistry-I (CEMGCOR02T) Section-A	Kinetic Theory of Gases and Real gases	10L	AB	4 WEEKS
	Physical Chemistry-I (CEMGCOR02T) Section-A	Chemical Kinetics	08L	SB	3 WEEKS
	Physical Chemistry-I Section-A (CEMGCOR02T)	Liquids	06L	AB	2 WEEKS
	Physical Chemistry-I Section-A (CEMGCOR02T)	Solids	06L	SB	2 WEEKS
	Inorganic Chemistry-II Section-B (CEMGCOR02T)	Chemical Bonding and Molecular Structure	16L	DC	5 WEEKS
	Inorganic Chemistry-II Section-B (CEMGCOR02T	Comparative study of p-block elements	14L	AD	4 WEEKS
	Physical Chemistry-I Lab Section-A (CEMGCOR02P)	1. Surface Tension measurement 2. Viscosity Measurement 3. Study of Kinetics	30L	AB	10 WEEKS
	Inorganic Chemistry-II Lab Section-B (CEMGCOR02P)	Qualitative semimicro analysis of mixtures containing three radicals	30L	AD + DC	10 WEEKS

Semester	Syllabus Module/unit	Topic	No of Lectures (Hours)	Teachers	Distributions
4th Semester (Honours)	Physical Chemistry-III (CEMACOR08T) Application of Thermodynamics-II	1. Colligative properties 2. Phase rule 3. Binary solutions	20L	AB/SB	8 WEEKS
	Physical Chemistry-III (CEMACOR08T) Electrical Properties of molecules	1. Ionic equilibrium 2. Electromotive Force 3. Dipole moment and polarizability	20L	AB/SB	8 WEEKS
	Physical Chemistry-III (CEMACOR08T) Quantum Chemistry	1. Angular momentum 2. Qualitative treatment of H atom or H like ions 3. LCAO and HF-SCF	20L	AB	8 WEEKS
	Physical Chemistry-III Lab (CEMACOR08P)	Experiment No-1,2,3,4,5,6	60L	AB+SB	20 WEEKS
	Inorganic Chemistry-III (CEMACOR09T)	General Principles of Metallurgy	06L	GK	2 WEEKS
	Inorganic Chemistry-III (CEMACOR09T)	Chemistry of S and P block elements 1. Noble Gases 2. Inorganic Polymers	30L	GK	10 WEEKS
	Inorganic Chemistry-III (CEMACOR09T)	Coordination Chemistry-I	24L	GK	8 WEEKS
	Inorganic Chemistry-III Lab (CEMACOR09P)	1. Complexometric titration 2. Inorganic Preparation	60L	GK	20 WEEKS
	Organic Chemistry-IV (CEMACOR10T)	Nitrogen compounds	12L	AD	3 WEEKS
	Organic Chemistry-IV (CEMACOR10T)	Rearrangements	14L	DC	4 WEEKS
	Organic	The Logic of Organic	14L	DC	4 WEEKS

	Chemistry-IV (CEMACOR10T)	Synthesis			
	Organic Chemistry-IV (CEMACOR10T)	Organic Spectroscopy 1. UV 2. IR 3. NMR	20L	AD	8 WEEKS
	Organic Chemistry-IV Lab (CEMACOR10P)	Quantitative Estimations	60L	AD+DC	20 WEEKS

Semester	Syllabus Module/Unit	Topic	No of Lectures (Hours)	Teachers	Distributions
4th Semester (General)	Physical Chemistry-III Section-A (CEMGCOR04T)	Solutions	06L	AB/SB	2 WEEKS
	Physical Chemistry-III Section-A (CEMGCOR04T)	Phase Equilibria	08L	AB	3 WEEKS
	Physical Chemistry-III Section-A (CEMGCOR04T)	Conductance	08L	AB	3 WEEKS
	Physical Chemistry-III Section-A (CEMGCOR04T)	Electromotive force	08L	SB	3 WEEKS
	Analytical and Enviromental Chemistry Section-B (CEMGCOR04T)	Chemical Analysis	15L	AD	5 WEEKS
	Analytical and Enviromental Chemistry Section-B (CEMGCOR04T)	Environmental Chemistry	15L	DC	5 WEEKS
	Physical Chemistry Lab Section-A (CEMGCOR04P)	1. Distribution law 2. Phase equilibria 3. Conductance 4. Potentiometry	30L	AB+SB	10 WEEKS
	Analytical and	Analytical and	30L	AB	10 WEEKS

	Environmental Chemistry Lab Section-B (CEMGCOR04P)	environmental chemistry			

Semester	Syllabus Module/Unit	Topic	No of Lectures (Hours)	Teachers	Distributions
6th Semester (Honours)	Inorganic Chemistry-V (CEMACOR13T)	Bioinorganic chemistry	24L	GK/SNC	8 WEEKS
	Inorganic Chemistry-V (CEMACOR13T)	Organometallic Chemistry	24L	AB/SNC	8 WEEKS
	Inorganic Chemistry-V (CEMACOR13T)	Reaction Kinetics and Mechanism	12L	SNC	4 WEEKS
	Inorganic Chemistry-V Lab (CEMACOR13P)	Qualitative semimicro analysis of mixtures containing four mixture	60L	AB/GK	20 WEEKS
	Physical Chemistry- IV (CEMACOR14T) Molecular Spectroscopy	1. Rotational 2. Vibrational 3. Raman 4. NMR 5. ESR	25L	SB	5 WEEKS
	Physical Chemistry- IV (CEMACOR14T) Photochemistry	1. Lambert-Beer law 2. Photochemical Processes 3. Rate of photochemical processes	15L	SB	5 WEEKS
	Physical Chemistry- IV (CEMACOR14T) Surface Phenomenon	1. Surface Tension and energy 2. Adsorption 3. Colloids	20L	AB	6 WEEKS
	Physical Chemistry- IV Lab (CEMACOR14P)	Experiments no-1,2,3,4,5,6	60L	AB+SB	20 WEEKS

	Green Chemistry (CEMADSE04T)	Introduction to Green Chemistry	04L	DC	2 WEEKS
	Green Chemistry (CEMADSE04T)	Principles of Green chemistry and designing a chemical synthesis	30L	DC	10 WEEKS
	Green Chemistry (CEMADSE04T)	Examples of Green Synthesis	16L	AD	8 WEEKS
	Green Chemistry (CEMADSE04T)	Future Trends in Green Chemistry	10L	AD	4 WEEKS
	Green Chemistry Lab (CEMADSE04P)	1. Safer starting materials 2. Using renewable resources 3. Avoiding waste 4. Use of enzymes as catalysts 5. Alternative green solvents 6. Alternative sources of energy	60L	DC + AD	20 WEEKS
	Polymer Chemistry (CEMADSE06T)	Introduction and history of polymeric materials	04L	AB	2 WEEKS
	Polymer Chemistry (CEMADSE06T)	Functionality and its importance	08L	AB	4 WEEKS
	Polymer Chemistry (CEMADSE06T)	Kinetics of polymerization	08L	AB	4 WEEKS
	Polymer Chemistry (CEMADSE06T)	Crystallization and crystallinity	04L	AB	2 WEEKS
	Polymer Chemistry (CEMADSE06T)	Nature and structure of polymers	04L	AB	2 WEEKS
	Polymer Chemistry (CEMADSE06T	Determination of molecular weight of polymers	08L	AB	4 WEEKS
	Polymer Chemistry (CEMADSE06T)	Glass transition temperature (Tg) and determination of Tg	08L	AB	4 WEEKS
	Polymer Chemistry (CEMADSE06T)	Polymer Solution	08L	AB	4 WEEKS

	Polymer Chemistry (CEMADSE06T	Properties of polymer	10L	AB	5 WEEKS
	Polymer Chemistry Lab (CEMADSE06P)	1.Polymer Chemistry 2. Polymer characterization 3. Polymer Analysis	60L	AB	20 WEEKS

Semester	Syllabus Module/Unit	Topic	No of lectures (Hours)	Teacher	Distribution
6th Semester (General)	Inorganic Chemistry-4 Section-A (CEMGDSE04T)	Chemistry of 3D metals	06L	AB	2 WEEKS
	Inorganic Chemistry-4 Section-A (CEMGDSE04T)	Organometallic compounds	12L	AB	3 WEEKS
	Inorganic Chemistry-4 Section-A (CEMGDSE04T)	Bioinorganic chemistry	12L	SB	3 WEEKS
	Organic Chemistry Section- B (CEMGDSE04T)	Polynuclear and heteronuclear aromatic compounds	06L	AD	2 WEEKS
	Organic Chemistry Section- B (CEMGDSE04T)	Active methylene compounds	06L	AD	2 WEEKS
	Organic Chemistry Section- B (CEMGDSE04T)	Application of Spectroscopy to simple organic molecules	18L	DC	5 WEEKS
	Inorganic Chemistry Section-A (CEMGDSE04P)	Seperation of mixtures by chromatography	30L	GK	10 WEEKS
	Organic Chemistry Section- B (CEMGDSE04P)	Systematic qualitative organic analysis of organic compounds	30L	AD + DC	10 WEEKS

Academic Calendar 2021-2022

Department of Chemistry

Semester	Syllabus Module/Unit	Topic	No. of lectures (Hours)	Teachers	Distribution
1st semester (H)	Bonding and physical properties(CEMACOR01T)	1. Valance Bond Theory 2. Electronic Displacement 3. MO Theory 4. Physical properties	25L	AD	6 weeks
	General Treatment of Reaction Mechanism (CEMACOR01T)	1. Mechanistic classification 2. Reactive intermediates	10L	DC	4 weeks
	Stereochemistry I (CEMACOR01T)	1. Concept of chirality and symmetry 2. Relative and absolute configuration 3. Optical activity of chiral compounds	25L	DC	6 weeks
	Organic chemistry I (Lab) (CEMACOR01P)	1. Separation 2. Determination of boiling point 3. Identification of a pure Organic compound	60L	DC + AD	20 weeks
	Physical Chemistry-I Kinetic Theory and Gaseous State (CEMACOR02T)	1. Kinetic Theory of gases 2. Maxwell's distribution of speed and energy 3. Real gas and virial equation	20L	SB	5 weeks
	Chemical Thermodynamics (CEMACOR02T)	1. Zeroth and 1st law of thermodynamics 2. Thermochemistry 3. 2nd law	25L	AB	6 weeks
	Chemical Kinetics (CEMACOR02T)	1. Rate law, order and molecularity	15L	SB	4 weeks

		2. Role of T and theories of reaction rate 3. Homogeneous catalysis			
	Physical Chemistry -I Lab (CEMACOR02P)	1. Experiment 1-5	60L	SB+AB	20 weeks

Semester	Syllabus Module/Unit	Topic	No of lectures (Hours)	Teachers	Distribution
1st Semester (G)	Section A: Inorganic Chemistry-I (CEMGCOR01T)	1. Atomic structure 2. Chemical periodicity 3. Acids and bases 4. Redox reaction	30L	SB+AB	8 weeks
	Section B: Organic Chemistry- I (CEMGCOR01T)	1. Fundamentals of organic chemistry 2. Stereochemistry 3. Nucleophilic substitution and Elimination reaction 4. Aliphatic Hydrocarbons	30L	DC + AD	8 weeks
	Hydrocarbons Lab (CEMGCOR01P)	Inorganic Chemistry lab	30L	SB	8 weeks
	Hydrocarbons Lab (CEMGCOR01P)	Organic chemistry lab	30L	DC + AD	8 weeks

Semester	Syllabus Module/Unit	Topic	No of lectures (Hours)	Teachers	Distribution
3rd	Physical	1. Ficks Law	15L	AB	5 weeks

semester (H)	Chemistry -II Transport Process (CEMACOR05T)	2. Viscosity 3. Conductance and transport number			
	Application of Thermodynamics-I (CEMACOR05T)	1. Partial properties and chemical potential 1. Chemi Experiment 1 2. cal Equilibrium 3. Chemical potential and other properties	25L	AB+SB	6 weeks
	Foundation of Quantum Mechanics (CEMACOR05T)	1. Beginning of Quantum mechanics 2. Wave function 3. Concept of Operators 4. Particle in a Box 5. Simple Harmonic Oscillator	20 L	SB	5 weeks
	Physical Chemistry lab-II (CEMACOR05P)	1. Experiment 1 2. Experiment 2 3. Experiment 3 4. Experiment 4 5. Experiment 5 6. Experiment 6	60L	SB+AB	20 weeks
	Inorganic Chemistry-II (CEMACOR06T) Chemical Bonding-I	1. Ionic Bond 2. Covalent Bond	24L	GK	6 weeks
	Chemical Bonding-II (CEMACOR06T)	1. MO concept of bonding 2. Metallic Bond 3. Weak Chemical Forces	24L	GK	6 weeks
	Radioactivity (CEMACOR06T)	Radioactivity	12L	GK	6 weeks
	Inorganic	Iodo/Iodimetric titration	60L	GK	20 weeks

	Chemistry-II Lab (CEMACOR06 P)				
	Organic Chemistry-III (CEMACOR07 T)	Chemistry of alkenes and alkynes	15L	DC	8 weeks
	Organic Chemistry-III (CEMACOR07 T)	Aromatic Substitution	10L	DC	4 weeks
	Organic Chemistry-III (CEMACOR07 T)	Carbonyl and Related compounds	30L	AD	10 weeks
	Organic Chemistry-III (CEMACOR07 T)	Organometallics	5L	AD	2 weeks
	Organic Chemistry-III Lab (CEMACOR07 P)	Qualitative Analysis of Single Solid Organic Compounds	60L	DC + AD	20 weeks

Semester	Syllabus Module/Unit	Topic	No of lectures (Hours)	Teachers	Distribution
3rd Semester (G)	Section A: Physical Chemistry-II (CEMGCORE03T)	1. Chemical Energetics 2. Chemical Equilibrium 3. Ionic Equilibrium	30L	AB/SB	10 weeks
	Section B: Organic Chemistry -II (CEMGCORE03T	1. Aromatic Hydrocarbons 2. Organometallic compounds 3. Aryl Halides 4. Alcohols, Phenols and Ethers 5. Carbonyl Compounds	30L	DC + AD	10 weeks
	Section A: Physical	Ionic Equilibria	30L	AB/SB	10 weeks

	Chemistry Lab (CEMGCORE03P)				
	Section B: Organic Chemistry Lab (CEMGCORE03P)	Identification of a pure organic compound	30L	DC + AD	10 weeks

Semester	Syllabus Module/Unit	Topic	No of lectures (Hours)	Teachers	Distribution
5th semester (H)	Advanced physical chemistry : Crystal Structure (CEMADSE01T)	1. Bravais Lattice and Laws of Crystallography 2. Crystal planes	20L	SB	8 weeks
	Statistical Thermodynamics (CEMADSE01T)	1. Configuration 2. Boltzmann distribution 3. Partition function	20L	AB	8 weeks
	Special selected topics (CEMADSE01T)	1. Specific heat of solid 2. 3rd law 3. Polymers	20L	AB/SB	8 weeks
	Advanced Physical Chemistry Lab (CEMADSE01P)	Computer programs based on numerical methods	60L	AB	20 weeks
	Analytical methods in chemistry: Qualitative and quantitative aspects of	Qualitative and quantitative aspects of analysis	05L	AB	2 weeks

	analysis (CEMADSE02T)				
	Optical methods of analysis (CEMADSE02T)	1. UV-Visible spectroscopy 2. Flame atomic absorption and emission spectroscopy	25L	AB/GK	9 weeks
	Thermal methods of analysis (CEMADSE02T)	Thermogravimetry	05L	GK	2 weeks
	Electroanalytical methods (CEMADSE02T)	Electroanalytical methods	10L	AB	4 weeks
	Separation techniques (CEMADSE02T)	1. Solvent extraction 2. Mechanism of extraction 3. Chromatography	15L	AD/AB/DC	6 weeks
	Analytical methods in chemistry-Lab (CEMADSE02P)	1. Separation Technique 2. Solvent Extraction 3. Spectrophotometry	60L	DC/AB	20 weeks
	Inorganic Chemistry-IV (CEMACOR11T)	1. Coordination chemistry -II	36L	GK/SNC	12 weeks
	Inorganic Chemistry-IV (CEMACOR11T)	1. Lanthanoids and Actinoids	24L	SNC/GK	9 weeks
	Inorganic Chemistry-IV Lab (CEMACOR11P)	1. Chromatography of metal ions 2. Gravimetry 3. Spectrophotometry	60L	GK/SNC	20 weeks
	Organic Chemistry-IV (CEMACOR12T) Carbocycles and	1.Polynuclear hydrocarbons and their derivatives 2.Heterocyclic compounds	16L	AD	6 weeks

	Heterocycles				
	Cyclic Stereochemistry (CEMACOR 12T)	Alicyclic Compounds	10L	AD	4 weeks
	Carbohydrates (CEMACOR 12T)	Monosaccharides	14L	DC	6 weeks
	Pericyclic reactions (CEMACOR E12T)	Pericyclic reactions	8L	DC	3 weeks
	Biomolecules (CEMACOR E12T)	1. Amino acids 2. Peptides 3. Nucleic acids	12L	DC	5 weeks
	Organic Chemistry-V Lab (CEMACOR E12P	1. Chromatographic Separation 2. Spectroscopic Analysis of organic compounds	60L	DC + AD	20 weeks

Semester	Syllabus Module/Unit	Topic	No of lectures (Hours)	Teachers	Distribution
5th semester (G)	Polymer chemistry (CEMGDSE01T)	1. Introduction and history of polymer chemistry 2. Functionality and its importance 3. Kinetics of polymerization 4. Crystallization and crystallinity 5. Nature and structure of polymers 6. Determination of molecular weight of polymers	60L	AB + SB + DC + AD	20 weeks

		7. Polymer solution 8. Properties of polymers			
	Polymer chemistry (CEMGDSE01P)	1. Polymer synthesis 2. Polymer characterization 3. Polymer analysis	60L	AD	20 weeks

ACADEMIC CALENDER 2021-2022(EVEN SEMESTER)

CHEMISTRY DEPARTMENT

Semester	Syllabus Module/Unit	Topic	No of Lectures (Hours)	Teachers	Distribution
2nd Semester (Honours)	Inorganic Chemistry-I (CEMACOR03T)	Extra nuclear structure of atom	18L	BGC	6 WEEKS
	Inorganic Chemistry-I (CEMACOR03T)	Chemical periodicity	8L	BGC	3 WEEKS
	Inorganic Chemistry-I (CEMACOR03T)	Acid-Base reaction	16L	BGC/AB	5 WEEKS
	Inorganic Chemistry-I (CEMAOR03T)	Redox Reaction and precipitation reaction	18L	AB/BGC	6 WEEKS
	Inorganic Chemistry-I Lab (CEMACOR03P)	1. Acid Base titration 2. Oxidation Reduction titration	60L	BGC/SB	20 WEEKS
	Organic Chemistry-II (CEMACOR04T)	Stereochemistry-II	20L	DC	8 WEEKS
	Organic Chemistry-II (CEMACOR04T)	General Treatment of Reaction Mechanism II	22L	DC + AD	9 WEEKS
	Organic Chemistry-II (CEMACOR04T	Substitution and Elimination	18L	AD	6 WEEKS

		Reaction			
	Organic Chemistry-II Lab (CEMACOR04P)	Organic Preparations	60L	DC + AD	20 WEEKS

Semester	Syllabus Module/Unit	Topic	No of Lectures (Hours)	Teachers	Distributions
2nd Semester (General)	Physical Chemistry-I (CEMGCOR02T) Section-A	Kinetic Theory of Gases and Real gases	10L	AB	4 WEEKS
	Physical Chemistry-I (CEMGCOR02T) Section-A	Chemical Kinetics	08L	SB	3 WEEKS
	Physical Chemistry-I Section-A (CEMGCOR02T)	Liquids	06L	AB	2 WEEKS
	Physical Chemistry-I Section-A (CEMGCOR02T)	Solids	06L	SB	2 WEEKS
	Inorganic Chemistry-II Section-B (CEMGCOR02T)	Chemical Bonding and Molecular Structure	16L	DC	5 WEEKS
	Inorganic Chemistry-II Section-B (CEMGCOR02T	Comparative study of p-block elements	14L	AD	4 WEEKS
	Physical Chemistry-I Lab	1. Surface Tension measurement 2. Viscosity	30L	AB/SB	10 WEEKS

	Section-A (CEMGCOR02P)	Measurement 3. Study of Kinetics			
	Inorganic Chemistry-II Lab Section-B (CEMGCOR02P)	Qualitative semimicro analysis of mixtures containing three radicals	30L	BGC	10 WEEKS

Semester	Syllabus Module/unit	Topic	No of Lectures (Hours)	Teachers	Distributions
4th Semester (Honours)	Physical Chemistry-III (CEMACOR08T) Application of Thermodynamics-II	1. Colligative properties 2. Phase rule 3. Binary solutions	20L	AB/SB	8 WEEKS
	Physical Chemistry-III (CEMACOR08T) Electrical Properties of molecules	1. Ionic equilibrium 2. Electromotive Force 3. Dipole moment and polarizability	20L	AB/SB	8 WEEKS
	Physical Chemistry-III (CEMACOR08T) Quantum Chemistry	1. Angular momentum 2. Qualitative treatment of H atom or H like ions 3. LCAO and HF-SCF	20L	AB	8 WEEKS
	Physical Chemistry-III Lab (CEMACOR08P)	Experiment No- 1,2,3,4,5,6	60L	AB+SB	20 WEEKS
	Inorganic Chemistry-III (CEMACOR09T)	General Principles of Metallurgy	06L	GK	2 WEEKS
	Inorganic	Chemistry of S and P	30L	BGC	10 WEEKS

	Chemistry-III (CEMACOR09T)	block elements 1. Noble Gases 2. Inorganic Polymers			
	Inorganic Chemistry-III (CEMACOR09T)	Coordination Chemistry-I	24L	GK	8 WEEKS
	Inorganic Chemistry-III Lab (CEMACOR09P)	1. Complexometric titration 2. Inorganic Preparation	60L	GK	20 WEEKS
	Organic Chemistry-IV (CEMACOR10T)	Nitrogen compounds	12L	AD	3 WEEKS
	Organic Chemistry-IV (CEMACOR10T)	Rearrangements	14L	DC	4 WEEKS
	Organic Chemistry-IV (CEMACOR10T)	The Logic of Organic Synthesis	14L	DC	4 WEEKS
	Organic Chemistry-IV (CEMACOR10T)	Organic Spectroscopy 1. UV 2. IR 3. NMR	20L	AD	8 WEEKS
	Organic Chemistry-IV Lab (CEMACOR10P)	Quantitative Estimations	60L	AD+DC	20 WEEKS

Semester	Syllabus Module/Unit	Topic	No of Lectures (Hours)	Teachers	Distributions
4th Semester (General)	Physical Chemistry-III Section-A (CEMGCOR04T)	Solutions	06L	SB	2 WEEKS

	Physical Chemistry-III Section-A (CEMGCOR04 T)	Phase Equilibria	08L	AB	3 WEEKS
	Physical Chemistry-III Section-A (CEMGCOR04 T)	Conductance	08L	AB	3 WEEKS
	Physical Chemistry-III Section-A (CEMGCOR04 T)	Electromotive force	08L	SB	3 WEEKS
	Analytical and Enviromental Chemistry Section-B (CEMGCOR04 T)	Chemical Analysis	15L	AD	5 WEEKS
	Analytical and Enviromental Chemistry Section-B (CEMGCOR04 T)	Environmental Chemistry	15L	DC	5 WEEKS
	Physical Chemistry Lab Section-A (CEMGCOR04 P)	1. Distribution law 2. Phase equilibria 3. Conductance 4. Potentiometry	30L	AB+SB	10 WEEKS
	Analytical and Environmental Chemistry Lab Section-B (CEMGCOR04 P)	Analytical and environmental chemistry	30L	AD/DC/GK	10 WEEKS

Semester	Syllabus Module/Unit	Topic	No of Lectur	Teachers	Distributions

			es (Hours)		
6th Semester (Honours)	Inorganic Chemistry-V (CEMACOR13T)	Bioinorganic chemistry	24L	SNC/SB	8 WEEKS
	Inorganic Chemistry-V (CEMACOR13T)	Organometallic Chemistry	24L	SNC/AB/GK	8 WEEKS
	Inorganic Chemistry-V (CEMACOR13T)	Reaction Kinetics and Mechanism	12L	SNC	4 WEEKS
	Inorganic Chemistry-V Lab (CEMACOR13P)	Qualitative semimicro analysis of mixtures containing four mixture	60L	GK/SNC	20 WEEKS
	Physical Chemistry- IV (CEMACOR14T) Molecular Spectroscopy	1. Rotational 2. Vibrational 3. Raman 4. NMR 5. ESR	25L	SB	5 WEEKS
	Physical Chemistry- IV (CEMACOR14T) Photochemistry	1. Lambert-Beer law 2. Photochemical Processes 3. Rate of photochemical processes	15L	SB	5 WEEKS
	Physical Chemistry- IV (CEMACOR14T) Surface Phenomenon	1. Surface Tension and energy 2. Adsorption 3. Colloids	20L	AB	6 WEEKS
	Physical Chemistry- IV Lab (CEMACOR14P)	Experiments no-1,2,3,4,5,6	60L	AB+SB	20 WEEKS
	Green Chemistry	Introduction to Green Chemistry	04L	DC	2 WEEKS

	(CEMADSE04T)				
	Green Chemistry (CEMADSE04T)	Principles of Green chemistry and designing a chemical synthesis	30L	DC	10 WEEKS
	Green Chemistry (CEMADSE04T)	Examples of Green Synthesis	16L	AD	8 WEEKS
	Green Chemistry (CEMADSE04T)	Future Trends in Green Chemistry	10L	AD	4 WEEKS
	Green Chemistry Lab (CEMADSE04P)	1. Safer starting materials 2. Using renewable resources 3. Avoiding waste 4. Use of enzymes as catalysts 5. Alternative green solvents 6. Alternative sources of energy	60L	DC + AD	20 WEEKS
	Polymer Chemistry (CEMADSE06T)	Introduction and history of polymeric materials	04L	AB	2 WEEKS
	Polymer Chemistry (CEMADSE06T)	Functionality and its importance	08L	AB	4 WEEKS
	Polymer Chemistry (CEMADSE06T)	Kinetics of polymerization	08L	AD	4 WEEKS
	Polymer Chemistry (CEMADSE06T)	Crystallization and crystallinity	04L	AB/SB	2 WEEKS
	Polymer Chemistry (CEMADSE06T)	Nature and structure of polymers	04L	DC	2 WEEKS
	Polymer Chemistry	Determination of molecular weight of	08L	AB/SB	4 WEEKS

	(CEMADSE06T	polymers			
	Polymer Chemistry (CEMADSE06T)	Glass transition temperature (Tg) and determination of Tg	08L	AB	4 WEEKS
	Polymer Chemistry (CEMADSE06T)	Polymer Solution	08L	SB	4 WEEKS
	Polymer Chemistry (CEMADSE06T	Properties of polymer	10L	AB/AD	5 WEEKS
	Polymer Chemistry Lab (CEMADSE06P)	1.Polymer Chemistry 2. Polymer characterization 3. Polymer Analysis	60L	AD/DC	20 WEEKS

Semester	Syllabus Module/Unit	Topic	No of lectures (Hours)	Teacher	Distribution
6th Semester (General)	CEMGDSE03T: INORGANIC MATERIALS OF INDUSTRIAL IMPORTANCE	Silicate Industries	16L	DC	2 WEEKS
	CEMGDSE03T: INORGANIC MATERIALS OF INDUSTRIAL IMPORTANCE	Fertilizers	10 L	AD	3 WEEKS
	CEMGDSE03T: INORGANIC MATERIALS OF INDUSTRIAL IMPORTANCE	Surface Coatings	06L	SB	3 WEEKS
	CEMGDSE03T: INORGANIC MATERIALS OF	Alloys	06L	AB	2 WEEKS

	INDUSTRIAL IMPORTANCE				
	CEMGDSE03T: INORGANIC MATERIALS OF INDUSTRIAL IMPORTANCE	Batteries	06L	AB	2 WEEKS
	CEMGDSE03T: INORGANIC MATERIALS OF INDUSTRIAL IMPORTANCE	Catalysis	06L	SB	5 WEEKS
	CEMGDSE03T: INORGANIC MATERIALS OF INDUSTRIAL IMPORTANCE	Chemical Explosives	04L	AD	10 WEEKS
	CEMGDSE03P: INORGANIC MATERIALS OF INDUSTRIAL IMPORTANCE	Practical Experimental Quantitative Analysis	60L	SB + DC	20 WEEKS