

2019-2020 Academic Calendar

Department of Chemistry

Semester	Syllabus Module/Unit	Topic	No. of lectures (Hours)	Teachers	Distribution
1 st semester (H)	Bonding and physical properties (CEMACORET1)	<ol style="list-style-type: none"> 1. Valence Bond Theory 2. Electronic Displacement 3. MO Theory 4. Physical properties 	25L	AD	12 WEEKS
	General Treatment of Reaction Mechanism (CEMACORE01T)	<ol style="list-style-type: none"> 1. Mechanistic classification 2. Reactive intermediates 	10L	DC	6 WEEKS
	Stereochemistry I (CEMACORE01T)	<ol style="list-style-type: none"> 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)	<ol style="list-style-type: none"> 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)	<ol style="list-style-type: none"> 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)	<ol style="list-style-type: none"> 1. Zeroth and 1st law of thermodynamics 2. Thermochemistry 3. 2nd law 	25L	AB	14 WEEKS
	Chemical Kinetics (CEMACORE02T)	<ol style="list-style-type: none"> 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)	<ol style="list-style-type: none"> 1. Experiment 1 2. Experiment 3 3. Experiment 4 	60L	AB/SB	24 WEEKS

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1 st Semester (G)	Section A: Inorganic Chemistry-I (CEMGCORE01T)	<ol style="list-style-type: none"> 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)	<ol style="list-style-type: none"> 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

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3 rd Semester (G)	Section A: Physical Chemistry-II (CEMGCORE03T)	<ol style="list-style-type: none"> 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

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5 th 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. 3 rd 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 (CEMACORE12T)	Pericyclic reactions	8L	DC	4 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	24 WEEKS

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5 th 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

		<p>polymers</p> <ol style="list-style-type: none"> 7. Polymer solution 8. Properties of polymers 			
	Polymer chemistry (CEMGDSE01P)	<ol style="list-style-type: none"> 1. Polymer synthesis 2. Polymer characterization 3. Polymer analysis 	60L	DC/GK	24 WEEKS
	Green chemistry (CEMGDSE02T)	<ol style="list-style-type: none"> 1. Introduction to green chemistry 2. Principles of green chemistry and designing a chemical synthesis 3. Example of green synthesis/ reactions and some real world cases 4. Future trends in green chemistry 	60L	DC/AD	24 WEEKS
	Green chemistry (CEMGDSE02P)	<ol style="list-style-type: none"> 1. Avoiding waste 2. Alternative green solvent 3. Alternative sources of energy 	60L	DC/AD	24 WEEKS