

Course Number and Name												
BCH101 - ENGINEERING CHEMISTRY I												
Credits and Contact Hours												
3 & 45												
Course Coordinator's Name												
Ms Madhubala												
Text Books and References												
TEXT BOOKS:												
1. P.C.Jain and Monica Jain, "Engineering Chemistry" Dhanpat Rai Pub, Co., New Delhi (2002).												
2. S.S. Dara "A text book of engineering chemistry" S.Chand & Co.Ltd., New Delhi (2006).												
3. P. J. Lucia, M. Subhashini, "Engineering Chemistry, Volume 1", Crystal Publications, Chennai, (2007).												
REFERENCES:												
1. B.K.Sharma "Engineering chemistry" Krishna Prakasan Media (P) Ltd., Meerut (2001).												
2. B. Sivasankar "Engineering Chemistry" Tata McGraw-Hill Pub.Co.Ltd, New Delhi (2008)												
Course Description												
To impart a sound knowledge on the principles of chemistry involving the different application oriented topics required for all engineering branches.												
Prerequisites						Co-requisites						
+2 level Chemistry						Nil						
required, elective, or selected elective (as per Table 5-1)												
Required												
Course Outcomes (COs)												
CO1 :Understand the principles of water characterization and treatment for portable and industrial purposes.												
CO2 :To impart knowledge on the essential aspects of Principles of polymer chemistry and engineering applications of polymers												
CO3 :Having a sound knowledge in the Field of the Conventional and non-Conventional energy												
CO4:To impart knowledge on the essential aspects of electrochemical cells, emf and applications of emf measurements												
CO5 :To make the students understand the Principles of corrosion and corrosion control.												
CO6 :To impart knowledge about the Conventional and non-conventional energy sources and energy storage devices												
Student Outcomes (SOs) from Criterion 3 covered by this Course												
COs/SOs	a	b	c	d	e	f	g	h	i	j	k	
CO1	H						H					
CO2		L	H		M							
CO3		M		H								
CO4	H		M	L			H					
CO5		L	L									
CO6	H						H					

List of Topics Covered**UNIT I Water Technology****9**

Introduction-Characteristics : Hardness of water – types - temporary and permanent hardness - estimation by EDTA method Alkalinity – types of alkalinity - Phenolphthalein and Methyl orange alkalinity - determination –Domestic water treatment – disinfection methods (Chlorination, ozonation , UV treatment) Boiler feed water – requirements – disadvantages of using hard water in boilers Internal conditioning (Calgon Conditioning method) – External conditioning – Demineralization process – Desalination and Reverse osmosis.

UNIT II Polymers**9**

Introduction-Polymers- definition – polymerization – degree of polymerisation - types of polymerisation – Addition polymerization and Condensation polymerization – Mechanism of Polymerisation - free radical polymerization mechanism only, Plastics: Classification – thermoplastics and thermosetting plastics – difference between thermoplastics and thermosetting plastics - preparation, properties and uses of PVC, Teflon, nylon-6,6, PET, Rubber :Types – drawbacks of natural rubber -vulcanization of rubber - properties and uses of vulcanized rubber Synthetic rubbers – butyl rubber and SBR

UNIT III Electrochemistry**9**

Introduction CELLS : Types of Cells : Electrochemical cells , Electrolytic cells – Reversible and Irreversible cells EMF – measurement of emf – Single electrode potential – Nernst equation Reference electrodes : Standard Hydrogen electrode -Calomel electrode Ion selective electrode :Glass electrode and measurement of pH using Glass electrode Electrochemical series – significance Titrations :Potentiometer titrations (redox - Fe^{2+} vs dichromate titrations) Conductometric titrations (acid-base – HCl vs, NaOH titrations)

UNIT IV Corrosion and Corrosion Control**9**

Introduction: Chemical corrosion Definition - Chemical Corrosion - Electrochemical corrosion – different types – galvanic corrosion –differential aeration corrosion – mechanism of Chemical and Electrochemical corrosion factors influencing corrosion Corrosion control – sacrificial anode and impressed cathodic current methods – Protective coatings :Paints – constituents of the paint and their functions Metallic coatings – electroplating of Gold and electroless plating of Nickel.

UNIT V Non-Conventional Energy Sources and Storage Devices**9**

Introduction : Nuclear fission and nuclear fusion reactions – differences between nuclear fission and nuclear fusion reactions – nuclear chain Reactions – nuclear energy critical mass - super critical mass - sub - critical mass Light water nuclear reactor for power generation (block diagram only) – breeder reactor Solar energy conversion – solar cells – wind energy Fuel cells – hydrogen – oxygen fuel cell Batteries :Primary and secondary Batteries – differences between Primary and secondary Batteries Secondary batteries: Lead–acid storage battery –working – uses Nickel–cadmium battery - working –uses Solid – state battery : Lithium battery.

A textbook is a book containing a comprehensive compilation of content in a branch of study with the intention of explaining it. Textbooks are produced to meet the needs of educators, usually at educational institutions. Schoolbooks are textbooks and other books used in schools. Today, many textbooks are published in both print and digital formats. The history of textbooks dates back to ancient civilizations. For example, Ancient Greeks wrote educational texts. The modern textbook has its roots in the textbooks of the learning book, educational book in the English contemporary dictionary. Textbooks in the Palestinian territories are school textbooks published in the Palestinian territories. Textbooks in Israel are published in Israel by the Ministry of Education of Israel and other educational institutions. The Ministry of Education of Israel defines the curriculum of schools in Israel and is in charge of the recruitment and training of teachers. Until Wikipedia. Find Textbooks and Supplemental Material by Browsing the Links Below. Use this page to the fullest by reading more detailed information featured within the pages listed below. There is a very large amount of information about all different kinds of textbooks and topics relevant to students compiled on this page. The Art of Public Speaking. November 4, 2011. There are many textbooks that help detail the art of public speaking.