

Course Number and Name												
<b>BCE055 - INDUSTRIAL WASTE TREATMENT AND DISPOSAL</b>												
Credits and Contact Hours												
<b>3 &amp; 45</b>												
Course Coordinator's Name												
<b>Dr.M.P.Chockalingam</b>												
Text Books and References												
<b>TEXT BOOKS:</b>												
1. Eckenfalder W.W,"Industrial Water Pollution Control", McGraw Hill, New York, 1989												
<b>REFERENCES:</b>												
1. Arceivala S.J & Shyam Asolekar R, "Waste Water Treatment and Pollution Control Tata McGraw Hill, 1998.												
2. <a href="#">Nelson Leonard Nemerow</a> ," Theories and practice of industrial waste treatment", Addison Wesley Pub. Co., 1963												
3. World Bank Group "Pollution prevention and Treatment Hand Book" World Bank and UNEP Washington DC, 1998												
Course Description												
<ul style="list-style-type: none"> <li>To provide knowledge on sources and characteristics of industrial waste water, techniques and approaches for minimizing the generation and application of physio-chemical and biological treatment methods for recovery, reuse and disposal.</li> </ul>												
Prerequisites						Co-requisites						
Environmental Engineering						NIL						
required, elective, or selected elective (as per Table 5-1)												
Course Outcomes (COs)												
CO1	Know the elements of construction planning and estimating activity durations and resource requirements.											
CO2	Know the elements of scheduling and to apply appropriate tools and techniques like networks and coding systems.											
CO3	Understand the monitoring and accounting of projects through cost control.											
CO4	Know the elements of quality control and safety of construction projects.											
CO5	Know the concept of gathering and using project information											
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	M			H
	CO2			L				M				
	CO3	L	M	M				M				
	CO4	L	M	M				M				

	CO5	L	M	M				H		H			
<b>List of Topics Covered</b>													
<b>UNIT I</b>	<b>EFFECTS AND CONTROL OF INDUSTRIAL POLLUTION</b>											<b>9</b>	
Effects of industrial wastes on streams, land and air, wastewater treatment plants, water quality criteria – effluent standards : Process modification, method and material changes, housekeeping etc., to reduce water discharges and strength of the waste and established recovery methods for bye products within the plant operations.													
<b>UNIT II</b>	<b>CHARACTERISTICS AND TREATMENT OF INDUSTRIAL WASTEWATER</b>											<b>9</b>	
Characteristics of major industrial waste water (liquid wastes) Chemical Industries: Petrochemicals & refineries, pharmaceuticals. Apparel Industries: Textile, synthetic fibres, leather, paper. Agro Industries: Fertilizer Food Industries: Heat – packing pickles, canning poultry and eggs, distillers, sugar. Metallurgical Industries: Thermal power station, nuclear power plants.													
<b>UNIT III</b>	<b>PHYSICAL TREATMENT METHODS</b>											<b>9</b>	
Conventional methods of treatment and disposal of industrial wastes. Equalisation and neutralization, separation of solids – sedimentation and filtrations.													
<b>UNIT IV</b>	<b>BIOLOGICAL TREATMENT METHODS</b>											<b>9</b>	
Removal of organic contents: Biological treatment methods, aerobic and anaerobic, digestion, tickling filters, stabilization ponds, activated sludge process – oxidation ditch.													
<b>UNIT V</b>	<b>PHYSICO – CHEMICAL TREATMENT METHODS</b>											<b>9</b>	
Physico - Chemical Treatment Method – Neutralization, coagulation, flocculation, adsorption and precipitation. Combined treatment of industrial and municipal wastes.													