E-WASTE MANAGEMENT

Course Code	20EC2701B	**Year**	IV	**Semester**	I
Course Category	Open Elective-III	**Branch**	Common to All	**Course Type**	Theory
Credits	3	**L-T-P**	3-0-0	**Prerequisites**	
Continuous Internal Evaluation:	30	**Semester End Evaluation:**	70	**Total Marks:**	100

Course Outcomes	
Upon successful completion of the course, the student will be able to	
CO1	Know about the environmental impacts of e-waste.
CO2	Apply various concept learned under e-waste management hierarchy.
CO3	Distinguished the role of various national and internal act and laws applicable for e-waste management and handling.
CO4	Analyze the e – waste management measures proposed under national and global legislations.

Mapping of course outcomes with Program outcomes (CO/ PO/PSO Matrix)

Note: 1- Weak correlation 2-Medium correlation 3-Strong correlation

* - Average value indicates course correlation strength with mapped PO

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1						2	2							2
CO2						2	2							2
CO3						2	2							2
CO4						2	2							2

Syllabus		
Unit No.	**Contents**	**Mapped CO**
I	**Introduction.** E- waste; composition and generation. Global context in e- waste; E-waste pollutants, E waste hazardous properties, Effects of pollutant (E- waste) on human health and surrounding environment, domestic e-waste disposal, Basic principles of E waste management, Component of E waste management, Technologies for recovery of resources from electronic waste, resource recovery potential of e-waste, steps in recycling and recovery of materials-mechanical processing, technologies for recovery of materials, occupational and environmental health perspectives of recycling e-waste in India.	CO1
II	**E-waste hazardous on Global trade** Essential factors in global waste trade economy, Waste trading as a quint essential part of electronic recycling, Free trade agreements as a means of waste trading. Import of hazardous e-waste in India; India's stand on liberalizing import rules, E-waste economy in the organized and unorganized sector. Estimation and recycling of e-	CO1, CO2

	waste in metro cities of India.	
III	**E-waste control measures** Need for stringent health safeguards and environmental protection laws in India, Extended Producers Responsibility (EPR), Import of e-waste permissions, Producer-Public-Government cooperation, Administrative Controls & Engineering controls, monitoring of compliance of Rules, Effective regulatory mechanism strengthened by manpower and technical expertise, Reduction of waste at source.	CO1, CO3
IV	E-waste (Management and Handling) Rules, 2011; and E-Waste (Management) Rules, 2016 - Salient Features and its likely implication. Government assistance for TSDFs.	CO1, CO4
V	The international legislation: The Basel Convention; The Bamako Convention. The Rotterdam Convention. Waste Electrical and Electronic Equipment (WEEE) Directive in the European Union, Restrictions of Hazardous Substances (RoHS) Directive	CO1, CO4

Learning Resources
Text Books
1. E-waste: implications, regulations, and management in India and current global best practices", Johri R., TERI Press, New Delhi
Reference Books
1. Electronic Waste – 1st Edition (Toxicology and Public Health Issues) , Fowler B. 2017Elsevier 2. Electronic Waste Management. Science , Hester R.E., and Harrison R.M. 2009