UTKALMANI GOPABANDHU INSTITUTE OF ENGINEERING, ROURKELA

DEPARTMENT OF CHEMICAL ENGINEERING

LESSON PLAN

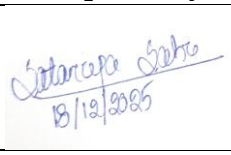
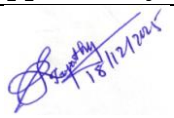
SUBJECT	**MATERIAL SCIENCE & TECHNOLOGY**
SUBJECT CODE	**CHEPC206**
SEMESTER	**4TH**
SESSION	**2025-2026 Semester (22.12.2025 -18.04.2026)**
NAME OF FACULTY	**SATARUPA SAHU**

WEEK	**TOPIC TO BE COVERED**
WEEK 1	Introduction of engineering materials and classification
	Engineering requirement of materials
	Selection criteria of materials
WEEK 2	Introduction to structure of atoms and molecules
	Classification of various structure of atoms and molecules
	Bonding in solids
WEEK 3	Classification of bonds
	Comparison of bonds
	Revision
WEEK 4	Introduction to Crystal structure
	Classification of Crystal structure
	Crystal geometry
WEEK 5	Structure of solids
	Methods of determining structures
	Imperfection in crystals
WEEK 6	Classification of imperfection
	Point imperfection
	Mechanical properties of materials
WEEK 7	Electrical properties of materials
	Magnetic properties of materials
	Deformation of materials
WEEK 8	Heat Treatment techniques
	Heat Treatment techniques
	Corrosion, theories of corrosion
WEEK 9	Control and prevention of corrosion.
	Engineering materials
	Ferrous metals ,Iron and their alloys
WEEK10	Iron and steel Iron carbon equilibrium diagram
	Iron and steel Iron carbon equilibrium diagram
	Non-ferrous metals and alloys

WEEK11	Aluminium and its alloys with reference to the application in chemical industries
	Copper and its alloys with reference to the application in chemical industries
	Zinc and its alloys with reference to the application in chemical industries
WEEK 12	Lead and its alloys with reference to the application in chemical industries
	Nickel and its alloys with reference to the application in chemical industries
	Revision
WEEK 13	Classifications of Inorganic materials
	Introduction to Ceramics, Glass and refractories
	Inorganic materials with special reference to the applications in chemical Industries
WEEK 14	Organic materials: wood, plastics, and rubber
	Organic materials with special reference to the applications in chemical Industries
	Introduction to Advanced material
WEEK 15	Biomaterials with special reference to the applications in chemical Industries
	Nanomaterials with special reference to the applications in chemical Industries
	Composites with special reference to the applications in chemical Industries

BOOKS FOR REFERENCE:

1. V. Raghavan, "Materials Science and Engineering- A First course", Prentice Hall of India Pvt. Ltd.
2. R. Balasubramaniam, "Callister's Materials Science and Engineering", Wiley

	Prepared by	**Approved by**
Signature		
Name	**Satarupa Sahu**	**ER RAJESH TRIPATHY**
Designation	**Lecturer STAGE-I**	**HOD, Chemical.**
SESSION	**2025-2026 (Semester from Date: 22.12.2025 to Date : 18.04.2026)**	