UTKALMANI GOPABANDHU INSTITUTE OF ENGINEERING, ROURKELA

DEPARTMENT OF CHEMICAL ENGINEERING
LESSON PLAN
Semester-3rd
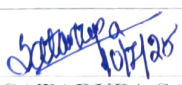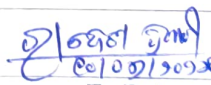### SUBJECT- CHEMICAL PROCESS CALCULATION (CHEPC205 TH:3)
PREPARED BY- SATARUPA SAHU

	Topics covered
WEEK 1	Dimensions and systems of units
	Fundamental quantities of units, Derived quantities
	Unit conversions in MKS and SI systems
WEEK 2	Solve numerical on unit conversion
	Importance of basis of calculation
	Concept of mole, atom, atomic weight, molecular weight
WEEK 3	Solve numerical on kmole, katom, molecular weight
	Solve numerical on equivalent weight
	Composition of solid, liquid and gas in terms of mass, mole and volume by expressing in percentage
WEEK 4	Composition of solid, liquid and gas in terms of mass, mole and volume by ratio and fraction
	Solve numerical on composition of mixture
	Formula and definition of Molarity, Molality, Normality
WEEK 5	Solve simple numerical on molarity
	Solve simple numerical on normality
	Solve numerical on molarity
WEEK 6	Concept of Partial pressure and Vapour pressure; Different Gas Laws: Boyle''s Law, Charle's Law, Avogadro's Law,
	Solve numerical problem on Boyle''s Law, Charle's Law, Avogadro's Law
	Solve numerical problem on Boyle''s Law, Charle's Law, Avogadro's Law
WEEK 7	Gay Lussac's Law, Amagat's Law, Dalton's Law, Ideal Gas Law;

	Solve numerical problem on Gay Lussac's Law, Amagat's Law, Dalton's Law, Ideal Gas Law;	
	Solve numerical problem on Gay Lussac's Law, Amagat's Law, Dalton's Law, Ideal Gas Law;	
WEEK 8	Difference between Ideal solution and Real solution; Raoult's Law and Henry's Law	
	Solve numerical on gas laws and solutions	
	Solve numerical	
WEEK 9	REVISION	
	Law of conservation of mass; Material balance equation for unit operations	
	Principles, Block diagram and problem based on distillation,	
WEEK 10	Solve numerical on distillation	
	Principles, Block diagram and problem based on evaporation,	
	Solve numerical on evaporation	
WEEK 11	Principles, Block diagram and problem based on drying,	
	Solve numerical on drying	
	Principles, Block diagram and problem based on mixing	
WEEK 12	Solve numerical on mixing	
	REVISION	
	Concept of Excess and Limiting reactant, Conversion, Yield and Selectivity	
WEEK 13	solve simple numerical on excess limiting agent	
	Solve numerical on conversion yield	
	Solve numerical on conversion and selctivity	
WEEK 14	Revision	
	Standard Heat of Reaction; Standard Heat of Combustion; Standard Heat of Formation	
	Hess Law of Constant Heat Summation	
WEEK 15	Solve numerical on Standard Heat of Reaction	
	Solve numerical on Law of Constant Heat Summation	
	REVISION	

BOOKS FOR REFERENCE:

- V. Narayanan and B. Lakshmikutty, "Stoichiometry and Process Calculations", Prentice Hall of India Ltd, New Delhi.
- Hougen and Watson, "Chemical process principle", CBS Publication, New Delhi.
- Bhatt & Vora, "Stoichiometry", TMH Publication, New Delhi.
- K. A. Gavhane, "Introduction to Process Calculation", Nirali Prakashan, Pune

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Signature		
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SESSION	2025-2026 (Semester from Date: 14. 07. 2025 to Date: 15.11.2025)	