UTKALMANI GOPABANDHU INSTITUTE OF ENGINEERING, ROURKELA

LESSON PLAN

SUBJECT-CHEMICAL REACTION ENGINEERING

PREPARED BY- ER RAJESH TRIPATHY

DEPARTMENT OF CHEMICAL ENGINEERING

	Topics covered
WEEK 1	IntroductiontoChemicalReaction engineering
	Classificationofchemicalreaction
	Rateofreaction,rateconstant
	Elementaryandnon-elementaryreaction.
WEEK 2	Molecularityandorderofreaction
	Conceptofactivationenergy
	Arrheniusequation.
WEEK 3	NumericalsonArrhenius equition.
	NumericalsonArrhenius equition
	Numericalsonrateofreaction
WEEK 4	Half-lifereaction
	Numericalsonhalf-lifeperiod
	Numericalstodeterminetheorderofreaction
	Doubtclear class
WEEK 5	Quiztest
	Mathodsofinterpretation ofbatchreactordata
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WEEK 6	Derivationofirreversibleunimolecularfirstorderreactionequition
	Derivationofirreversibleunimolecularfirstorderreactionequition
	Numericalsbasedonfirstorderequition
	Numericalsbasedonfirstorderequition
WEEK 7	Numericalsbasedonfirstorderequition
	Numericalsbasedonfirstorderequition

	Derivationofirreversiblebimoleculartypesecondorderreaction.
WEEK 8	Derivation of irreversible bimolecular typesecond order reaction
	Derivationofirreversiblebimoleculartypesecondorderreaction
	Numericalsbasedonsecondorderequition
WEEK 9	Numericalsbasedonsecondorderequition
	Numericalsbasedonsecondorderequition
	Derivationofequationforconstantvolumebatchreactor
WEEK 10	Autocatalyticreaction,Variablevolumebatchreactor,Reversiblereaction
	Doubtclear class
	Doubtclear class
WEEK 11	Quiztest
	Defineandclassifycatalysiswithexample
	Characteristicsofcatalyticreaction
WEEK 12	Promoter,Inhibitors,Accelerators,carriersandtheiractions.
	Promoter,Inhibitors,Accelerators,carriersandtheiractions.
	Catalyticpoisoning.
	Autocatalysis,negativecatalysis
WEEK 13	enzymecatalysis.
	Deactivationofcatalysis,Activationenergyandcatalysis.
	Discusstheoriesofcatalysis
WEEK 14	Discusstheoriesofcatalysis
	Constructionandoperationof Batchreactors
	semibatchreactor,continuousreactor,
	TankReactors,TubularReactor,FixedBedReactor
WEEK 15	FluidizedbedReactor,Spraycolumnreactor
	PackedcolumnReactor,Reactor withcatalyst
	Basic designequationsforbatch,CSTR,TFR.
	Basic designequationsforbatch,CSTR,TFR.
WEEK 16	NumericalsonBatch,CSTR,PFR
	Spacevelocity,space-time,andresidencetime
	Choiceofareactorandmaterialofconstructionreactor.
	Reversiblereactionwithexample
WEEK 17	Chemical equilibrium,characteristic of chemicalequilibrium.
	LawofMassaction,equilibriumconstant
	LeChatelier'sPrinciple.
	Conditionformaximumyieldinindustrialprocesses

BOOKS FOR REFERENCE:

- Chemical Reaction Engineering by OctiveLevenspiel, Wiley Publication
- Chemical Reaction Engineering Volume-1 by K A GavaneNirali Publication

	Prepared by	**Approved by**
Signature		
Name	**ER RAJESH TRIPATHY**	**ER RAJESH TRIPATHY**
DESIGNATION	**SR.LECTURER**	**I/C, HOD**
SESSION	**2024-25**	