

RGPV (Diploma Wing ) Bhopal		SCHEME FOR LEARNING OUTCOME			Branch Code			Course Code			CO Code	LO Code	Format No. 4
					C	0	2	3	0	3	1	1	
<b>COURSE NAME</b>		CHEMICAL ENGINEERING STOICHIOMETRY											
<b>CO Description</b>		Know concept and use of units, dimensions and conversion factors											
<b>LO Description</b>		use system of units for the given physical quantities and constants.											
SCHEME OF STUDY													
S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks						
1	Dimensions and system of units, CGS, MKS, FPS and SI system of units fundamental and derived quantities. Units of physical quantities, concept of gravitational constants and its value in different system, common constants, coefficients and their values, density, specific gravity, API and Baume	Interactive classroom teaching, demonstration, quiz, assignments, tutorial	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	4	3	Handouts, chalk board, PPT, text book.							
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required			External / Internal						
1	Pen Paper test/Theory Exam	Student will be asked to explain different system of units	10	(Test paper + Rating scale) and (Question paper +Rating scale)			internal/External						
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)													
Nil													

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<b>RGPV (Diploma Wing ) Bhopal</b>	<b>SCHEME FOR LEARNING OUTCOME</b>	<i>C</i>	<i>0</i>	<i>2</i>	<i>3</i>	<i>0</i>	<i>3</i>	<i>1</i>	<i>2</i>	Format No. 4
<b>COURSE NAME</b>	<b>CHEMICAL ENGINEERING STOICHIOMETRY</b>									

<b>CO Description</b>	Know concept and use of units, dimensions and conversion factors
<b>LO Description</b>	Convert the units from one system to another system.

**SCHEME OF STUDY**

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Conversion factor of units, calculation to convert unit of physical quantities in different system.	Interactive classroom teaching, demonstration, quiz, assignments, tutorial	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	2	4	Handouts, chalk board, PPT, text book.	

**SCHEME OF ASSESSMENT**

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Pen Paper test/Theory Exam	Student will be asked to convert value of a quantity from one system of unit to another	10	(Test paper + Rating scale) and (Question paper +Rating scale)	External

**ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)**

Nil

RGPV (Diploma Wing ) Bhopal		SCHEME FOR LEARNING OUTCOME		Branch Code			Course Code			CO Code	LO Code	Format No.
				C	0	2	3	0	3	2	1	4
<b>COURSE NAME</b>	CHEMICAL ENGINEERING STOICHIOMETRY											
<b>CO Description</b>	Apply the concept of mole, mass and volume for various chemical engineering processes											
<b>LO Description</b>	Solve numerical problems on mole concept.											
SCHEME OF STUDY												
S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks					
1	Mole concept, conversion of mass of substance to mole, atomic weight, molecular weight and equivalent weight	Interactive classroom teaching, demonstration, quiz, assignments, tutorial	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	02	03	Handouts, chalk board, ppt, text book						
SCHEME OF ASSESSMENT												
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required			External / Internal					
1	Pen Paper test/Theory Exam	Student will be asked to convert mass into mole, equivalent weight and vice versa	10	(Test paper + Rating scale) and (Question paper +Rating scale)			Internal					
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)												
Nil												

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					C	0	2	3	0	3	2	2	
<b>COURSE NAME</b>	CHEMICAL ENGINEERING STOICHIOMETRY												
<b>CO Description</b>	Apply the concept of mole, mass and volume for various chemical engineering processes.												
<b>LO Description</b>	Calculate composition of given mixture and solutions.												
SCHEME OF STUDY													
S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks						
1	Methods of expressing the composition of mixture weight percent, weight fraction, mole percent and mole fraction, volume percent and volume fraction, motility, molarity and normality of solution. Numerical problems. stoichiometric constants, mass relation in chemical reaction, calculation based on mass relation	Interactive classroom teaching, demonstration, quiz, assignments, tutorial.	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	06	06	Handouts, chalk board, PPT, text book,							
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required			External / Internal						
1	Pen Paper test/Theory Exam	Student will be asked to express composition of mixture in different ways.	10	(Test paper + Rating scale) and (Question paper +Rating scale)			External						
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)													
Nil													

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					C	0	2	3	0	3	3	1	
<b>COURSE NAME</b>	CHEMICAL ENGINEERING STOICHIOMETRY												
<b>CO Description</b>	Understand ideal gas laws and their application in chemical engineering operations and processes												
<b>LO Description</b>	Understand behaviour of ideal gas by knowing the laws of gases.												
SCHEME OF STUDY													
S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks						
1	Behaviour of ideal gases Boyle's law, Charles law, universal gas law, Avagadre's Hypotheses, partial pressure, Doltons law, Amagal's law.	Interactive classroom teaching, demonstration, quiz, assignments, tutorial.	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	04	02	Handouts, chalk board, PPT, text book,							
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required			External / Internal						
1	Pen Paper test/Theory Exam	Student will be asked to explain gas laws and their applications	10	(Test paper + Rating scale) and (Question paper +Rating scale)			External						
ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)													
Nil													

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				<i>C</i>	<i>0</i>	<i>2</i>	<i>3</i>	<i>0</i>	<i>3</i>	<i>3</i>	<i>2</i>	
<b>COURSE NAME</b>	CHEMICAL ENGINEERING STOICHIOMETRY											
<b>CO Description</b>	Understand ideal gas laws and their application in chemical engineering operations and processes											
<b>LO Description</b>	Apply ideal gas law for calculation of parameters in different state.											
<b>SCHEME OF STUDY</b>												
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching – Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>	<b>Remark</b>					
1	Standard Conditions, its application in solving problems, concept of equivalency of mole percent and volume percent of gases mixture.	Interactive classroom teaching, demonstration, quiz, assignments, tutorial.	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	05	4	Handouts, chalk board, charts, text books,						
<b>SCHEME OF ASSESSMENT</b>												
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>	<b>Maximum Marks</b>	<b>Resources Required</b>				<b>External / Internal</b>				
1	Pen Paper test/Theory Exam	Student will be asked to apply idal gas law at different conditions	10	(Test paper + Rating scale) and (Question paper +Rating scale)				External				
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>												
Nil												

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					<i>C</i>	<i>0</i>	<i>2</i>	<i>3</i>	<i>0</i>	<i>3</i>	<i>4</i>	<i>1</i>	
<b>COURSE NAME</b>	CHEMICAL ENGINEERING STOICHIOMETRY												
<b>CO Description</b>	Apply material balance concept in common unit operations and unit processes.												
<b>LO Description</b>	Prepare block diagram/process flow diagram for commonly used unit operations and unit processes with respect to mass balance												
<b>SCHEME OF STUDY</b>													
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching –Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>			<b>Remarks</b>				
1	Material balance ,Concept of material balance, law of conservation of mass, process flow sheet and block diagram preparation	Interactive classroom teaching, demonstration, quiz, assignments, tutorial.	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	04	03	Handouts, chalk board, PPT, text book, charts.							
<b>SCHEME OF ASSESSMENT</b>													
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>	<b>Maximum Marks</b>	<b>Resources Required</b>			<b>External / Internal</b>						
1	Pen Paper test/Theory Exam	Student will be asked explain law conservation of mass in industrial context	10	(Test paper + Rating scale) and (Question paper +Rating scale)			Internal						
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
Nil													

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					<i>C</i>	<i>0</i>	<i>2</i>	<i>3</i>	<i>0</i>	<i>3</i>	<i>4</i>	<i>2</i>	
<b>COURSE NAME</b>	CHEMICAL ENGINEERING STOICHIOMETRY												
<b>CO Description</b>	Apply material balance concept in common unit operations and unit processes.												
<b>LO Description</b>	Apply material balance concept to derive relationship among material inflow, outflow and transformation and solve common related problems.												
<b>SCHEME OF STUDY</b>													
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching – Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>	<b>Remarks</b>						
1	Processes involving no chemical reactions processes involving chemical reactions stoichio metric balance, concept of limiting and excess reactants, Tie and Key component, Overall balance, individual component balance, percentage conversion ,percent yield. Simple by-pass, recycle and purging operations, simple calculation on material balance for some common processes.	Interactive classroom teaching, demonstration, quiz, assignments, tutorial.	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	15	10	Handouts, chalk board, PPT, text book, charts.							
<b>SCHEME OF ASSESSMENT</b>													
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>	<b>Maximum Marks</b>	<b>Resources Required</b>			<b>External / Internal</b>						
1	Pen Paper test/Theory Exam	Student will be asked to apply material balances in actual plant practice problems	20	(Test paper + Rating scale) and (Question paper +Rating scale)			External						
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
Nil													

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					<i>C</i>	<i>0</i>	<i>2</i>	<i>3</i>	<i>0</i>	<i>3</i>	<i>5</i>	<i>1</i>	
<b>COURSE NAME</b>		CHEMICAL ENGINEERING STOICHIOMETRY											
<b>CO Description</b>		Understand concept of energy balance and its application.											
<b>LO Description</b>		Prepare process flow diagram for various unit operations and processes with respect to energy balance.											
<b>SCHEME OF STUDY</b>													
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching – Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>	<b>Remarks</b>						
1	Concept of energy balance. Law of conservation of energy, thermodynamics, physical properties of matter, heat capacity, Latent heat: Energy balance flow diagram for some common chemical processes.	Interactive classroom teaching, demonstration, quiz, assignments, tutorial.	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	04	03	Handouts, chalk board, PPT, text book, charts,							
<b>SCHEME OF ASSESSMENT</b>													
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>	<b>Maximum Marks</b>	<b>Resources Required</b>					<b>External / Internal</b>				
1	Pen Paper test/Theory Exam	Student will be asked to explain energy balance in industrial context	10	(Test paper + Rating scale) and (Question paper +Rating scale)					External				
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
Nil													

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					<i>C</i>	<i>0</i>	<i>2</i>	<i>3</i>	<i>0</i>	<i>3</i>	<i>5</i>	<i>2</i>	
<b>COURSE NAME</b>	CHEMICAL ENGINEERING STOICHIOMETRY												
<b>CO Description</b>	Understand concept of energy balance and its application												
<b>LO Description</b>	Calculate heat of reaction using laws of thermo chemistry												
<b>SCHEME OF STUDY</b>													
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching –Learning Method</b>	<b>Description of T-L Process</b>	<b>Teac h Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>			<b>Remarks</b>				
1	Thermochemistry, Hess’s law of thermochemistry, Standard heat of reactions heat of formation, heat of combustion, calculation of heat of reaction	Interactive classroom teaching, demonstration, quiz, assignments, tutorial.	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	07	03	Handouts, chalk board, PPT, text book, charts,							
<b>SCHEME OF ASSESSMENT</b>													
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>	<b>Maximum Marks</b>	<b>Resources Required</b>			<b>External / Internal</b>						
1	Pen Paper test/Theory Exam	Student will be asked to apply laws of thermochemistry	10	(Test paper + Rating scale) and (Question paper +Rating scale)			External						
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
Nil													

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				<i>C</i>	<i>0</i>	<i>2</i>	<i>3</i>	<i>0</i>	<i>3</i>	<i>5</i>	<i>3</i>	
<b>COURSE NAME</b>	CHEMICAL ENGINEERING STOICHIOMETRY											
<b>CO Description</b>	Understand concept of energy balance and its application											
<b>LO Description</b>	Carry out combustion calculations											
<b>SCHEME OF STUDY</b>												
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching –Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>		<b>Remarks</b>				
1	Fuel and its classification, block diagram of combustion unit with respect to material balance and energy balance. Calorific values of fuel, Net calorific value and gross calorific value of fuel, simple calculation on calorific values. determine theoretical and excess air required for combustion, C/H ratio of fuel, theoretical and excess air, simple combustion calculation	Interactive classroom teaching, demonstration, quiz, assignments, tutorial.	Teacher will explain the contents and provide handouts to students. Teacher will conduct assignments/ quiz/tutorial to make students practice their knowledge.	10	8	Handouts, chalk board, PPT, text book, charts.						
<b>SCHEME OF ASSESSMENT</b>												
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>	<b>Maximum Marks</b>	<b>Resources Required</b>				<b>External / Internal</b>				
1	Pen Paper test/Theory Exam	Student will be asked to carry out combustion calculations	30	(Test paper + Rating scale) and (Question paper +Rating scale)				External				
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>												
nil												

