

Branch

CHEMICAL

Semester

5

Course Code

Course Name

PROCESS HEAT TRANSFER

Course Outcome 1	Student will be able to understand modes of heat transfer and heat transfer by conduction	Teach Hrs	Marks
Learning Outcome 1	Student will be able to explain theory of steady-state one dimensional heat flow in conduction	6	5
Contents	Modes of heat transfer, fouriers law, steady state and unsteady state, fouriers law for steady state one dimensional heat flow, thermal conductivity, simple numerical problems		
Method of Assessment	Paper Pen Test		
Learning Outcome 2	Student will be able to solve problem of conduction heat transfer of given system.	14	10
Contents	Steady-state conduction through flat slab, compound resistance in series, coaxile cylinder and sphere. Log mean radius, critical radius of insulation, simple numerical problems		
Method of Assessment	Theory Exam		
Learning Outcome 3	Student will be able to calculate heat transfer through composite wall, lagged pipe of given setup.	6	10
Contents	Perform in laboratory		
Method of Assessment	Laboratory Test by observation		
Learning Outcome 4	Student will be able to calculate thermal conductivity of given powder and flat slab.	6	10
Contents	Perform in laboratory		
Method of Assessment	Laboratory Test by observation		
Course Outcome 2	Student will be able to understand principle of heat flow in fluid and fundamentals of connective heat transfer.		
Learning Outcome 1	Student will be able to explain theory of heat flow in fluid.	8	5
Contents	Approaches and temperature range for heat exchanging equipments, flow pattern, temperature length curve, rate of heat transfer, heat flux, and average temperature.		
Method of Assessment	Theory Exam		

Learning Outcome 2	Student will be able to calculate basic parameter of heat exchanging equipment design.	11	15
Contents	Over all heat transfer coefficient, logarithmic mean temperature difference, enthalpy balance in heat exchanger and total condenser, individual heat transfer coefficient, calculation of overall heat transfer coefficient from individual coefficient, fouling factor, controlling resistance, simple numerical problems.		
Method of Assessment	Theory Exam		
Learning Outcome 3	Student will be able to understand theory and design equation of heat exchanging equipments.	10	10
Contents	Thermal boundary layer, laminar flow heat transfer by forced convection in tubes, by forced convection in tubular flow, Dittus-Bolter equation, Sieder-Tate equation, natural convection, equation for heat transfer in natural convection, heat transfer from condensing vapor, drop wise and film type condensation.		
Method of Assessment	Paper Pen Test		
Learning Outcome 4	Student will be able to evaluate individual heat transfer coefficient in natural and forced convection in given setup.	12	15
Contents	Perform in laboratory		
Method of Assessment	Laboratory Test by observation		
Course Outcome 3	Student will be able to understand thermal radiation and radiation heat transfer.		
Learning Outcome 1	Student will be able to explain theory of radiation and solve basic problem.	10	15
Contents	Nature of thermal radiation, wave length and frequency, origin of radiant energy, distribution of radiant energy, emissive power, planck's law Wien's displacement law, absorption, reflection and transmission. Blackbody, laws of black body radiation, stefan-boltzmann law radiation from non black surface, kirchhoff's law, whitebody, gray body. Exchange of radiation energy between two large parallel planes for both black body and for different emissivity simple numerical problems.		
Method of Assessment	Paper Pen Test		
Learning Outcome 2	Student will be able to evaluate Stefan-Boltzmann law constant in given setup.	6	10
Contents	Perform in laboratory		
Method of	Laboratory Test by observation		

Assessment			
Learning Outcome 3	Student will be able to evaluate emissivity of plate in given setup.	6	5
Contents	Perform in laboratory		
Method of Assessment	Laboratory Test by observation		
Course Outcome 4	Student will be able to understand and analyze heat exchanging equipments.		
Learning Outcome 1	Student will be able to understand working and able to design double pipe heat exchange.	10	10
Contents	Types of heat exchanger based on function and flow arrangement, construction and working of double-pipe heat exchanger simple problems of calculation of length, area, rate of heat transfer, simple design problems.		
Method of Assessment	Theory Exam		
Learning Outcome 2	Student will be able to understand working and able to design 1 - 1 and 1 - 2 shell and tube heat exchanger.	10	10
Contents	Construction and working of 1-1 and 1-2 shell and tube heat exchange, heat exchanger tubes, tube pitch, tube layout, baffles, shell, correction of LMTD for cross flow, plate type heat exchanger, extended surface equipment, simple design problems.		
Method of Assessment	Theory Exam		
Course Outcome 5	Student will be able to understand and analyze evaporators.		
Learning Outcome 1	Student will be able to explain theory of evaporator.	10	10
Contents	Effect of liquid characteristics, single and multiple effect evaporator, boiling point elevation, Duhring's rule, enthalpy concentration diagram, construction and working of following evaporators (a) horizontal tube, (b) calandriya type, (c) long tube vertical, (d) forced circulation.		
Method of Assessment	Theory Exam		
Learning Outcome 2	Student will be able to calculate parameter required for evaporator design.	10	10
Contents	Enthalpy balance (single effect), performance of tubular evaporator, capacity, economy, area, methods of feeding to multiple effect evaporator, design calculation for single effect (area, economy and capacity)		
Method of Assessment	Theory Exam		

RGPV (Diploma Wing) Bhopal		SCHEME FOR LEARNING OUTCOME			Branch Code			Course Code			CO Code	LO Code	Format No. 4
					C	0	2				1	1	
COURSE NAME		PROCESS HEAT TRANSFER											
CO Description		Student will be able to understand modes of heat transfer and heat transfer by conduction											
LO Description		Student will be able to explain theory of steady-state one dimensional heat flow in conduction											
SCHEME OF STUDY													
S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks						
1	Modes of heat transfer, fouriers law, steady state and unsteady state, fouriers law for steady state one dimensional heat flow, thermal conductivity, simple numerical problems	Traditional Lecture Method	Faculty will explain learning content. To identify students weakness assignment will be given and accordingly remedial and tutorials will be arranged.	6	-	Suggested text books, handouts, powerpoint, videos							
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required					External / Internal				
1	Paper-Pen Test	Theory question (including simple numerical problem) related to the learned content will be asked in the test paper	5	Test Paper + Rating Scale					Internal				
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. 4
				C	0	2				1	2	
COURSE NAME	PROCESS HEAT TRANSFER											
CO Description	Student will be able to understand modes of heat transfer and heat transfer by conduction											
LO Description	Student will be able to solve problem of conduction heat transfer of given 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	Steady-state conduction through flat slab, compound resistance in series, coaxile cylinder and sphere. Log mean radius, critical radius of insulation, simple numerical problems	Traditional Lecture Method	Faculty will explain learning content. To identify students weakness assignment will be given and accordingly remedial and tutorials will be arranged.	10	4	Suggested text books, handouts, powerpoint, videos						
SCHEME OF ASSESSMENT												
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required			External / Internal					
1	Theory Exam	Theory questions related to the learned content will be asked in the university question paper	10	Question paper			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. 4
					C	0	2				1	3	
COURSE NAME		PROCESS HEAT TRANSFER											
CO Description		Student will be able to understand modes of heat transfer and heat transfer by conduction											
LO Description		Student will be able to calculate heat transfer through composite wall, lagged pipe of given setup.											
SCHEME OF STUDY													
S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks						
1	Perform in laboratory	Lab-demonstration	Faculty will explain how to perform in lab and demonstrate how to take readings. How these observation are use to calculate rate of heat transfer and thermal conductivity faculty will explain how these data are use to design an equipment.		6	Experiment setup. Lab Manual Videos							
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required			External / Internal						
1	Laboratory Test by observation	Examiner will ask to students to take reading and then calculate in front of him and will asses correctness of result	10	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. 4
					<i>C</i>	<i>0</i>	<i>2</i>				<i>1</i>	<i>4</i>	
COURSE NAME		PROCESS HEAT TRANSFER											
CO Description		Student will be able to understand modes of heat transfer and heat transfer by conduction											
LO Description		Student will be able to calculate thermal conductivity of given powder and flat slab.											
SCHEME OF STUDY													
S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks						
1	Perform in laboratory	Lab-demonstration	Faculty will explain how to perform in lab and demonstrate how to take readings. How these observation are use to calculate rate of heat transfer and thermal conductivity faculty will explain how these data are use to design an equipment.		6	Experiment setup. Lab Manual Videos							
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required			External / Internal						
1	Laboratory Test by observation	Examiner will ask to students to take reading and then calculate in front of him and will asses correctness of result	10	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. 4
				C	0	2				2	1	
COURSE NAME		PROCESS HEAT TRANSFER										
CO Description		Student will be able to understand principle of heat flow in fluid and fundamentals of connective heat transfer.										
LO Description		Student will be able to explain theory of heat flow in fluid.										
SCHEME OF STUDY												
S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks					
1	Approaches and temperature range for heat exchanging equipments, flow pattern, temperature length curve, rate of heat transfer, heat flux, and average temperature.	Traditional Lecture Method	Faculty will explain learning content. Flow pattern of double pipe heat exchanger and shell and tube heat exchanger are demonstrate in lab, temp length curve will be draw by students. To identify students weakness assignment will be given and accordingly remedial and tutorials will be taken.	6	2	Suggested text books, handouts, powerpoint, video.						
SCHEME OF ASSESSMENT												
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required			External / Internal					
1	Theory Exam	Theory questions related to the learned content will be asked in the university question paper	05	Question paper			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. 4
					C	0	2				2	2	
COURSE NAME		PROCESS HEAT TRANSFER											
CO Description		Student will be able to understand principle of heat flow in fluid and fundamentals of connective heat transfer.											
LO Description		Student will be able to calculate basic parameter of heat exchanging equipment design.											
SCHEME OF STUDY													
S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks						
1	Over all heat transfer coefficient, logarithmic mean temperature difference, enthalpy balance in heat exchanger and total condenser, individual heat transfer coefficient, calculation of overall heat transfer coefficient from individual coefficient, fouling factor, controlling resistance, simple numerical problems.	Traditional Lecture Method	Faculty will explain learning content. To identify students weakness assignment will be given and accordingly remedial and tutorials will be arranged.	8	3	Suggested text books, handouts, powerpoint, videos							
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required			External / Internal						
1	Theory Exam	Theory questions related to the learned content will be asked in the university question paper	15	Question paper			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. 4
		C	0	2				2	3	

COURSE NAME	PROCESS HEAT TRANSFER
CO Description	Student will be able to understand principle of heat flow in fluid and fundamentals of connective heat transfer.
LO Description	Student will be able to understand theory and design equation of heat exchanging equipments.

SCHEME OF STUDY

S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Thermal boundary layer, laminar flow heat transfer by forced convection in tubes, by forced convection in tubuler flow, Dittus-Bolter equation, Sieder-Tate equation, natural convection, equation for heat transfer in natural convection, heat transfer from condensing vapor, drop wise and film type condensation.		Faculty will explain learning content. To identify students weakness assignment will be given and accordingly remedial and tutorials will be arranged. Drop wise and film type condensation will be demonstrate in lab.	8	2	Suggested text books, handouts, powerpoint, video.	

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Paper-Pen Test	Theory question (including simple numerical problem) related to the learned content will be asked in the test paper	10	Test Paper + Rating Scale	Internal

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. 4
					C	0	2				2	4	
COURSE NAME		PROCESS HEAT TRANSFER											
CO Description		Student will be able to understand principle of heat flow in fluid and fundamentals of connective heat transfer.											
LO Description		Student will be able to evaluate individual heat transfer coefficient in natural and forced convection in given setup.											
SCHEME OF STUDY													
S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks						
1	Perform in laboratory	Lab-demonstration	Faculty will explain how to perform in lab and demonstrate how to take readings. How these observation are use to calculate rate of heat transfer and thermal conductivity faculty will explain how these data are use to design an equipment.		12	Experiment setup. Lab Manual Videos							
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required			External / Internal						
1	Laboratory Test by observation	Faculty will ask to students to take reading and then calculate in front of him and will asses correctness of result	15	Rating Scale			Internal						
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. 4
		C	0	2				3	1	

COURSE NAME	PROCESS HEAT TRANSFER
CO Description	Student will be able to understand thermal radiation and radiation heat transfer.
LO Description	Student will be able to explain theory of radiation and solve basic problem.

SCHEME OF STUDY

S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Nature of thermal radiation, wave length and frequency, origin of radiant energy, distribution of radiant energy, emissive power, planck's law Wien's displacement law, absorption, reflection and transmission. Blackbody, laws of black body radiation, stefan-boltzmann law radiation from non black surface, kirchhoff's law, whitebody, gray body. Exchange of radiation energy between two large parallel planes for both black body and for different emissivity simple numerical problems.	Traditional Lecture Method	Faculty will explain learning content. To identify students weakness assignment will be given and accordingly remedial and tutorials will be arranged.	8	2	Suggested text books, handouts, powerpoint, videos	

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Paper-Pen Test	Theory question (including simple numerical problem) related to the learned content will be asked in the test paper	15	Test Paper + Rating Scale	Internal

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. 4
				C	0	2				3	2	
COURSE NAME		PROCESS HEAT TRANSFER										
CO Description		Student will be able to understand thermal radiation and radiation heat transfer.										
LO Description		Student will be able to evaluate Stefan-Boltzmann law constant in given setup.										
SCHEME OF STUDY												
S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks					
1	Perform in laboratory	Lab-demonstration	Faculty will explain how to perform in lab and demonstrate how to take readings. How these observation are use to calculate rate of heat transfer and thermal conductivity faculty will explain how these data are use to design an equipment.		6	Experiment setup. Lab Manual Videos						
SCHEME OF ASSESSMENT												
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required			External / Internal					
1	Laboratory Test by observation	Examiner will ask to students to take reading and then calculate in front of him and will asses correctness of result	10	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. 4
		C	0	2				3	3	

COURSE NAME	PROCESS HEAT TRANSFER
CO Description	Student will be able to understand thermal radiation and radiation heat transfer.
LO Description	Student will be able to evaluate emissivity of plate in given setup.

SCHEME OF STUDY

S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Perform in laboratory	Lab-demonstration	Faculty will explain how to perform in lab and demonstrate how to take readings. How these observation are use to calculate rate of heat transfer and thermal conductivity faculty will explain how these data are use to design an equipment.		6	Experiment setup. Lab Manual Videos	

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Laboratory Test by observation	Faculty will ask to students to take reading and then calculate in front of him and will asses correctness of result	05	Rating Scale	Internal

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. 4
					C	0	2				4	1	
COURSE NAME		PROCESS HEAT TRANSFER											
CO Description		Student will be able to understand and analyze heat exchanging equipments.											
LO Description		Student will be able to understand working and able to design double pipe heat exchange.											
SCHEME OF STUDY													
S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks						
1	Types of heat exchanger based on function and flow arrangement, construction and working of double-pipe heat exchanger simple problems of calculation of length, area, rate of heat transfer, simple design problems.	Traditional Lecture Method	Faculty will explain learning content. To identify students weakness assignment will be given and accordingly remedial and tutorials will be arranged. Double-pipe heat exchanger construction will be demonstrate in lab student will prepare a note on it.	8	2	Suggested text books, handouts, powerpoint, videos							
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required			External / Internal						
1	Theory Exam	Theory questions related to the learned content will be asked in the university question paper	10	Question paper			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. 4
		C	0	2				4	2	

COURSE NAME	PROCESS HEAT TRANSFER
CO Description	Student will be able to understand and analyze heat exchanging equipments.
LO Description	Student will be able to understand working and able to design 1 - 1 and 1 - 2 shell and tube heat exchanger.

SCHEME OF STUDY

S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Construction and working of 1-1 and 1-2 shell and tube heat exchange, heat exchanger tubes, tube pitch, tube layout, baffles, shell, correction of LMTD for cross flow, plate type heat exchanger, extended surface equipment, simple design problems.	Traditional Lecture Method	Faculty will explain learning content. To identify students weakness assignment will be given and accordingly remedial and tutorials will be arranged. Shell and tube heat exchanger construction will be demonstrate in lab student will prepare a note on it. Heat transfer in fin will be demonstration lab.	8	2	Suggested text books, handouts, powerpoint, videos	

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Theory Exam	Theory questions related to the learned content will be asked in the university question paper	10	Question paper	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. 4
					C	0	2				5	1	
COURSE NAME		PROCESS HEAT TRANSFER											
CO Description		Student will be able to understand and analyze evaporators.											
LO Description		Student will be able to explain theory of evaporator.											
SCHEME OF STUDY													
S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks						
1	Effect of liquid characteristics, single and multiple effect evaporator, boiling point elevation, Duhring's rule, enthalpy concentration diagram, construction and working of following evaporators (a) horizontal tube, (b) calandriya type, (c) long tube vertical, (d) forced circulation.	Traditional Lecture Method	Faculty will explain learning content. To identify students weakness assignment will be given and accordingly remedial and tutorials will be arranged. Single effect evaporator construction details will be demonstrate in lab student will prepare a note on it.	8	2	Suggested text books, handouts, powerpoint, videos							
SCHEME OF ASSESSMENT													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required			External / Internal						
1	Theory Exam	Theory questions related to the learned content will be asked in the university question paper	10	Question paper			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. 4
		C	0	2				5	2	

COURSE NAME	PROCESS HEAT TRANSFER
CO Description	Student will be able to understand and analyze evaporator.
LO Description	Student will be able to calculate parameter required for evaporator design.

SCHEME OF STUDY

S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Enthalpy balance (single effect), performance of tubular evaporator, capacity, economy, area, methods of feeding to multiple effect evaporator, design calculation for single effect (area, economy and capacity)	Traditional Lecture Method	Faculty will explain learning content. To identify students weakness assignment will be given and accordingly remedial and tutorials will be arranged.	8	2	Suggested text books, handouts, powerpoint, videos	

SCHEME OF ASSESSMENT

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Theory Exam	Theory questions related to the learned content will be asked in the university question paper	10	Question paper	External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

Nil