

Date- 27/06/2020

Hindustan College of Science & Technology

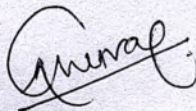
(Farah, Mathura)

Chemical Engineering Department

Notice

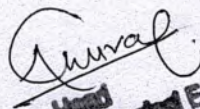
This is for information to all the students of 2nd, 3rd year that the Value Added Course (**Process Equipment Design & Solid Waste Management**) shall begin from 18th of July 2020. All the students of 2nd, 3rd year are directed to register themselves and fill up the registration form in the departments before start of the regular classes for the above courses.

The registration can be done from 6th July 2020 up to 10th July 2020.

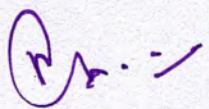


Mr. Anurag Bajpai

Head, Department of Chemical Engineering



Head
Department of Chemical Engg.
Hindustan College of Science & Technology
Farah, Mathura



Director
Hindustan College of
Science & Technology
FARAH (MATHURA)



**HINDUSTAN COLLEGE OF SCIENCE & TECHNOLOGY,
FARAH - MATHURA**

DEPARTMENT OF CHEMICAL ENGINEERING



Value Added Course
VAC-1701-Process Equipment Design

18th July 2020 – 28th Nov 2020 - Every Saturday: 3:10 PM – 4:50 PM



By

Mr. Anurag Bajpai
HOD -Chemical Engineering

Registration Dates
6th July 2020 – 10th July 2020

For Registration: Please contact
Mr. Raj Kumar, Office Staff, Department of Chemical Engineering

Anurag Bajpai
Head
Department of Chemical Engineering
Hindustan College of Science & Technology
Farah - Mathura

Raj Kumar
Director
Hindustan College of
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HINDUSTAN COLLEGE OF SCIENCE & TECHNOLOGY, FARAH -MATHURA



DEPARTMENT OF CHEMICAL ENGINEERING

Value Added Course

VAC -1701 - Process Equipment Design

18th July '2020 – 28th Nov 2020 - Every Saturday: 3:10 PM – 4:50 PM

Course Objectives

The main objective of this value added course are as follows:

1. Plan logistics for waste collection and disposal .
2. Formulate strategies for segregation of waste and waste reduction.
3. Plan appropriate recycles facility for heterogeneous wastes.
- 4 Plan and design waste collection systems.

Course Syllabus

Units	Details	Course Out comes
1	Introduction to waste management Logistics, importance, methods of logistics, human components, technological components- waste handling equipment and technology, and managerial goals, steps in waste management logistics	CO1
2	Waste collection system and organization Environmental aspects of waste collection, role of public authority and private sector in waste collection, organizing collection of residential waste, fee schemes, public awareness programs	CO2
3	Source segregation and collection source-segregated waste, Purpose of source segregation, segregation criteria and guidance, segregation potential and efficiencies, systems for collecting segregated fraction	CO3
4	Waste transfer stations Waste delivery, waste transfer, transportation of the reloaded waste, siting and Design of waste transfer station, economical considerations, recycling solid wastes, materials recovery facilities	CO4

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DEPARTMENT OF CHEMICAL ENGINEERING

Value Added Course

VAC-1701 - Process Equipment Design

18th July '2020 – 28th Nov 2020 - Every Saturday: 3:10 PM – 4:50 PM

Course Outcomes

- CO1 Plan logistics for waste collection and disposal
Formulate strategies for segregation of waste and waste reduction.
- CO2
- CO3 Plan appropriate recycles facility for heterogeneous wastes.
- CO4 Plan and design waste collection systems.

CO-PO Mappings

COS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3											2		
CO2	2	3											2		
CO3	2			3						2	2	2	2		
CO4			2	3						2	2	2		3	
Average	2	3	2	3						2	2	2	2	3	

Evaluation Criteria: 1. Evaluation of Practical assignments, Group project, Viva/Quiz

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Department of Chemical Engrg.
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Farah, Mathura

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Director
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Program Schedule

HINDUSTAN COLLEGE OF SCIENCE & TECHNOLOGY, FARAH -MATHURA

DEPARTMENT OF CHEMICAL ENGINEERING

Value Added Course VAC-1701 - Process Equipment Design

18th July '2020 – 28th Nov 2020 - Every Saturday: 3:10 PM – 4:50 PM



Session	Date	Time	No of Lectures	Session Topic	Resource Person
1	25-07-2020	3:10 PM – 4:50 PM	2	Topic 1: Design project procedure, design information from the literature	Mr. Anurag Bajpai
2	01-08-2020	3:10 PM – 4:50 PM	2	Topic 2: Flow diagrams, preliminary design	Mr. Anurag Bajpai
3	08-08-2020	3:10 PM – 4:50 PM	2	Topic 3: Comparison of different processes, equipment design	Mr. Anurag Bajpai
4	22-08-2020	3:10 PM – 4:50 PM	2	Topic 4: Scale-up in design, Materials of construction	Mr. Anurag Bajpai
5	29-08-2020	3:10 PM – 4:50 PM	2	Topic 5: Selection of materials, fabrication of equipment	Mr. Anurag Bajpai
6	05-09-2020	3:10 PM – 4:50 PM	2	Topic 6: Pressure vessels – calculation of thickness of cylindrical and spherical shells	Mr. Anurag Bajpai
7	12-09-2020	3:10 PM – 4:50 PM	2	Topic 7: Subjected to internal pressure, heads or covers	Mr. Anurag Bajpai
8	19-09-2020	3:10 PM – 4:50 PM	2	Topic 8: Storage vessels – storage of nonvolatile liquids, storage of volatile liquids	Mr. Anurag Bajpai
9	26-09-2020	3:10 PM – 4:50 PM	2	Topic 9: Storage of gases. Supports for vessels – bracket or lug supports	Mr. Anurag Bajpai
10	03-10-2020	3:10 PM – 4:50 PM	2	Topic 10: Leg supports, skirt supports, saddle supports	Mr. Anurag Bajpai
11	10-10-2020	3:10 PM – 4:50 PM	2	Topic 11: Design of double pipe heat exchangers	Mr. Anurag Bajpai
12	17-10-2020	3:10 PM – 4:50 PM	2	Topic 12: Shell and tube heat exchangers (1-2,2-4), optimum design and heat recovery	Mr. Anurag Bajpai
13	24-10-2020	3:10 PM – 4:50 PM	2	Topic 13: Selection of suitable heat exchanger	Mr. Anurag Bajpai
14	31-10-2020	3:10 PM – 4:50 PM	2	Topic 14: Design of single and multiple effect evaporators without boiling point elevation	Mr. Anurag Bajpai
15	07-11-2020	3:10 PM – 4:50 PM	2	Topic 15: Finite-stage contactors- bubble cap tray, sieve tray and valve tray units	Mr. Anurag Bajpai
16	14-11-2020	3:10 PM – 4:50 PM	2	Topic 16: Maximum allowable vapor velocities, plate and column efficiency, other design factors	Mr. Anurag Bajpai
17	21-11-2020	3:10 PM – 4:50 PM	2	Topic 17: Continuous contactors – types of packing, liquid distribution, pressure drop	Mr. Anurag Bajpai
18	28-11-2020	3:10 PM – 4:50 PM	2	Topic 18: Packing efficiencies. Relative merits of plate and packed towers, selection of contacting equipment	Mr. Anurag Bajpai
Total Number of Hours covered			36 (30 Hours)		

Anurag

Head
Department of Chemical Engineering
Hindustan College of Science & Technology
Farah, Mathura

[Signature]
Director

Hindustan College of
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Value added course-1

Process Equipment Design (VAC-1701)

UNIT-I

INTRODUCTION TO PLANT DESIGN.

PROCESS DESIGN DEVELOPMENT:

Design project procedure, design information from the literature, flow diagrams, preliminary design, comparison of different processes, equipment design, scale-up in design. Materials of construction, selection of materials, fabrication of equipment.

Learning Outcomes: After the completion of the Unit I, the student will be able to

1. Discuss the preliminary design of various processes
2. Identify various materials for fabrication of equipment
3. Explain the scale up in design

UNIT-II

MECHANICAL DESIGN OF PROCESS EQUIPMENT:

Pressure vessels – calculation of thickness of cylindrical and spherical shells subjected to internal pressure, heads or covers.

Storage vessels – storage of nonvolatile liquids, storage of volatile liquids, storage of gases. Supports for vessels – bracket or lug supports, leg supports, skirt supports, saddle supports.

Learning Outcomes: After the completion of the Unit II, the student will be able to

1. Identify various stresses acting on the walls of pressure vessels
2. Estimate the thickness of thin walled pressure vessels
3. Calculate the thickness of heads of pressure vessels

UNIT-III

HEAT TRANSFER EQUIPMENT DESIGN:

Design of double pipe heat exchangers, Shell and tube heat exchangers (1-2,2-4), optimum design and heat recovery, selection of suitable heat exchanger.

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Design of single and multiple effect evaporators without boiling point elevation.

Learning Outcomes: After the completion of the Unit III, the student will be able to

1. Identify the purpose of various heat exchangers
2. Estimate the overall heat transfer coefficient for heat exchangers
3. Calculate the area of multiple effect evaporator .

UNIT-IV

MASS TRANSFER EQUIPMENT DESIGN:

Finite-stage contactors- bubble cap tray, sieve tray and valve tray units, maximum allowable vapor velocities, plate and column efficiency, other design factors.

Continuous contactors – types of packing, liquid distribution, pressure drop, packing efficiencies. Relative merits of plate and packed towers, selection of contacting equipment.

Learning Outcomes: After the completion of the Unit IV, the student will be able to

1. Select the suitable contactor for a given mass transfer operation
2. Design a packed bed
3. Evaluate the design parameters of tray tower

Approval
Head
Department of Chemical Engg.
Hindustan College of Science & Technology
Farah, Mathura

Director
Director
Hindustan College of
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Hindustan College of Science and Technology - Mathura CHEMICAL ENGG.

CLASS TIME TABLE FOR ODD SEMESTER 2020-21

SESSION:	2020-21		W.E.F :	8/5/2020	CLASS TEACHER:	Mr. Anurag Bajpai (AB)			
YEAR/SEM-SEC:	III Year (V Sem)		ROOM.NO :	504-B	COUNSELLORS :	Mr. Chandra Pal Singh (CPS)			
Time / Day	I	II	III	IV	V	VI	VII	VIII	
	10:10 TO 11:00	11:00 TO 11:50	11:50 TO 12:40	12:40 TO 01:30	01:30 TO 02:20	02:20 TO 03:10	03:10 TO 04:00	04:00 TO 04:50	
MONDAY	MT-I	OT	CRE-II	CI	LUNCH	PDP		PDC	
	SKV	SA	AB	DP				LSB	
	504-B	504-B	504-B	504-B				504-B	
TUESDAY	OT	IPRS	CI	CRE-II		MT-I	PDC	IPRS	
	SA	CPS	DP	AB		SKV	LSB	SKV	
	504-B	504-B	504-B	504-B		504-B	504-B	504-B	
WEDNESDAY	MT-I	CRE-II	PDC	OT		IPRS	Process Modelling and Simulation Lab		
	SKV	AB	LSB	SA		SKV			
	504-B	504-B	504-B	504-B		504-B			
THURSDAY	MT-I	OT	CRE-II	IPRS		PDC	PDC Lab		
	SKV	SA	AB	CPS		LSB			
	504-B	504-B	504-B	504-B		504-B			
FRIDAY	PDC	PDP		OT		CRE-II	MT-I	CI	
	LSB			SA		AB	SKV	DP	
	504-B			504-B	504-B	504-B	504-B		
SATURDAY	Mass Transfer-I Lab		Mini Project or Internship Assessment		Library	VAC-1701			

Name of the Subject	Subject Code	Name of the Faculty	Total No. of Lect./Tut./Practical		
			Lect.	Tut.	Pract.
Mass Transfer -I (MT-I)	KCH501	Mr. Sandeep Kr. Verma (SKV)	4	1	0
Intellectual Property Rights & Standardization (IPRS)	KCH058	Mr. Sandeep Kr. Verma/Mr. Chandra Pal Singh	3	1	0
Chemical Reaction Engg.-II (CRE-II)	KCH502	Mr. Anurag Bajpai (AB)	4	1	0
Process Dynamics and Control (PDC)	KCH503	Mr. Lalit Singh Baghel (LSB)	4	1	0
Optimization Techniques (OT)	KCH052	Dr. Salim Ahmad (SA)	3	1	0
Constitution of India (CI)	NC	Mr. Dharpal Singh(DP)	3	0	0
Mini Project or Internship		Mr. Anurag Bajpai/Mr. Venktesh	0	0	2
Process Modelling and Simulation Lab	KCH 553	Dr. Salim Ahmad (SA)	0	0	2
Mass Transfer-I Lab	KCH551	Mr. Sandeep Kr. Verma/Mr. Asim Shukla	0	0	2
PDC Lab	KCH 552	Mr. Lalit Singh Baghel/Mr. Venktesh	0	0	2

Mr. Lalit Singh Baghel
Time Table Incharge

Director
Hindustan College of
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PARAH (MATHURA)

Department of Chemical Engg.
Hindustan College of Science & Technology
Parah, Mathura

Mr. Anurag Bajpai
Head of the Department

Hindustan College of Science & Technology

Department of Chemical Engineering

Value Added Course - Registration Form

Process Equipment Design

Session 2020-21

From 18th July, 2020 to 28th Nov, 2020

Sr. No.	Roll No.	Name	Department	Semester	Signature of Student
1	1806451001	AMIT KUMAR	Chemical	V	Amit Kumar
2	1806451002	Krishna Kumar	Chemical	V	Krishna
3	1806451003	NAVEEN KUMAR	Chemical	V	Naveen
4	1806451004	SHASHANK GUPTA	Chemical	V	Shashank
5	1806451006	Shuhaib Alam	Chemical	V	Suhaib
6	1806451007	SUMAN KUNTAL	Chemical	V	Suman
7	1806451008	SUMIT RATHORE	Chemical	V	Sumit
8	1806451009	UJJAWAL SINGH	Chemical	V	Ujjawal
9	1806451010	VAIBHAV SHARMA	Chemical	V	Vaibhav
10	1806451011	VANDNA SINGH	Chemical	V	Vandna
11	1806451012	VIPAN KUMAR	Chemical	V	Vipran
12	1900640519001	Vikash Yadav	Chemical	V	Vikash Yadav

(Signature)

Department of Chemical Engg.
Hindustan College of Science & Technology

(Signature)

Director
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Hindustan College of Science & Technology

Department of Chemical Engineering

Value Added Course - Registration Form

Process Equipment Design

Session 2020-21 (Odd Sem)

session wise Attendance Sheet

Sl. No.	Roll No.	Name	SEM	Signature of the Student by Session																	
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
				25.07	1.08	08.08	22.08	29.08	05.09	12.09	19.09	26.09	03.10	10.10	17.10	24.10	31.10	07.11	14.11	21.11	28.11
1	1806451001	AMIT KUMAR	V	Amit	Amit	A	Amit	Amit	Amit	Amit	Amit	A	Amit	Amit	Amit	Amit	Amit	A	Amit	Amit	Amit
2	1806451002	Krishna Kumar	V	Priya	A	Priya	Priya	Priya	Priya	Priya	A	Priya	A	Priya	Priya	Priya	Priya	A	Priya	Priya	
3	1806451003	NAVEEN KUMAR	V	Naveen	Naveen	Naveen	A	Naveen	Naveen	Naveen	Naveen	A	Naveen	Naveen	Naveen	Naveen	Naveen	Naveen	Naveen	Naveen	A
4	1806451004	SHASHANK GUPTA	V	Shank	Shank	Shank	Shank	Shank	A	Shank	Shank	Shank	Shank	Shank	A	Shank	Shank	Shank	A	Shank	A
5	1806451006	Shuhaib Alam	V	Salam	Salam	A	Salam	A	Salam	Salam	Salam	A	Salam	Salam	A	Salam	Salam	Salam	A	Salam	Salam
6	1806451007	SUMAN KUNTAL	V	Suman	Suman	Suman	A	Suman	Suman	Suman	A	Suman	Suman	Suman	A	Suman	Suman	Suman	Suman	Suman	Suman
7	1806451008	SUMIT RATHORE	V	Sumit	A	Sumit	Sumit	A	Sumit	A	Sumit	Sumit	A	Sumit	Sumit	Sumit	A	Sumit	Sumit	Sumit	
8	1806451009	UJJAWAL SINGH	V	Ujjwal	A	Ujjwal	Ujjwal	A	Ujjwal	Ujjwal	A	Ujjwal	Ujjwal	A	Ujjwal	A	Ujjwal	Ujjwal	Ujjwal	Ujjwal	
9	1806451010	VAIBHAV SHARMA	V	A	Vaibhav	Vaibhav	A	Vaibhav	Vaibhav	Vaibhav	Vaibhav	Vaibhav	Vaibhav	Vaibhav	Vaibhav	A	A	Vaibhav	Vaibhav	Vaibhav	
10	1806451011	VANDNA SINGH	V	A	Vandna	A	Vandna	Vandna	Vandna	Vandna	A	Vandna	Vandna	A	Vandna	Vandna	Vandna	Vandna	A	Vandna	Vandna
11	1806451012	VIPAN KUMAR	V	Vipan	Vipan	Vipan	Vipan	A	Vipan	Vipan	Vipan	Vipan	A	Vipan	Vipan	Vipan	Vipan	Vipan	Vipan	Vipan	A
12	1900640519001	Vikash Yadav	V	Vikas	Vikas	A	Vikas	Vikas	Vikas	Vikas	Vikas	Vikas	A	A	Vikas	Vikas	Vikas	Vikas	A	A	Vikas

Head
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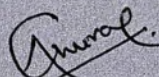
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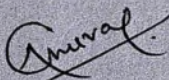


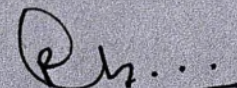
Certificate of Completion

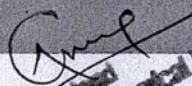
DEPARTMENT OF CHEMICAL ENGINEERING
Academic Session 2020-21

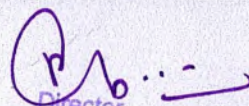
This is to certify that Mr. NAVEEN KUMAR, Roll No: 1806451003 of Course: B. Tech. Chemical Engineering , V semester has successfully completed 30 hours Value Added Course titled "Process Equipment Design" (Course code: VAC-1701):


Course Coordinator


Head of Department


Director, HCST


Head
Department of Chemical Engg.
Hindustan College of Science & Technology
Farah, Mathura


Director
Hindustan College of
Science & Technology
FARAH (MATHURA)



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FARAH, MATHURA



Certificate of Completion

DEPARTMENT OF CHEMICAL ENGINEERING
Academic Session 2020-21

This is to certify that Mr. SUMAN KUNTAL, Roll No: 1806451007 of Course: B. Tech. Chemical Engineering , V semester has successfully completed 30 hours Value Added Course titled "Process Equipment Design" (Course code: VAC-1701).

Course Coordinator

Head of Department

Director, HCST

Head
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