

<b>COURSE TITLE</b>	<b>PROCESS SIMULATION USING DWSIM - II</b>
<b>COURSE CODE</b>	<b>01CH0616</b>
<b>COURSE CREDITS</b>	<b>1</b>

**Objective:**

- 1 The objective of this course is to make students familiar with advanced simulation using DWSIM through hands-on sessions.

**Course Outcomes:** After completion of this course, student will be able to:

- 1 Identify and recall the fundamental components of DWSIM software.
- 2 Explain the process of adding material and energy streams to unit operations or processes.
- 3 Demonstrate the application of Chemical Engineering principles to simulate unit operations or processes.
- 4 Assess the performance of unit operations or processes by analyzing independent and dependent variables.

**Pre-requisite of course:** Basic knowledge of DWSIM software

**Teaching and Examination Scheme**

<b>Theory Hours</b>	<b>Tutorial Hours</b>	<b>Practical Hours</b>	<b>ESE</b>	<b>IA</b>	<b>CSE</b>	<b>Viva</b>	<b>Term Work</b>
0	0	2	0	0	0	50	50
<b>Contents : Unit</b>	<b>Topics</b>						<b>Contact Hours</b>
<b>Total Hours</b>							

**Suggested List of Experiments:**

<b>Contents : Unit</b>	<b>Topics</b>	<b>Contact Hours</b>
1	<b>Experiment 1</b> To simulate the combustor (Gibbs reactor) to burn methane using oxygen.	2
2	<b>Experiment 2</b> To simulate the combustor (Gibbs reactor) to burn methane using excess of air.	2
3	<b>Experiment 3</b> To simulate the heat exchanger.	2
4	<b>Experiment 4</b> To study the sensitivity analysis of heat exchanger and plot a graph between independent and dependent variable.	2

### Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
5	<b>Experiment 5</b> To simulate the Shell & Tube heat exchanger.	4
6	<b>Experiment 6</b> To simulate the distillation column.	2
7	<b>Experiment 7</b> To simulate the Gibbs reactor	2
8	<b>Experiment 8</b> To simulate the conversion reactor.	2
9	<b>Experiment 9</b> To simulate the plug flow reactor.	2
10	<b>Experiment 10</b> To calculate of bubble point of a binary system and also plot the graph.	2
11	<b>Experiment 11</b> To calculate of dew point of a binary system and also plot the graph.	2
12	<b>Experiment 12</b> To Draw of any one process flowsheet.	6
<b>Total Hours</b>		<b>30</b>

### Textbook :

- 1 Elementary principles of chemical processes, Felder, R. M., Rousseau, R. W., & Bullard, L. G., John Wiley & Sons., 2020

### References:

- 1 Basic principles and calculations in chemical engineering., Basic principles and calculations in chemical engineering., Himmelblau, D. M., & Riggs, J. B. , FT press., 2012

### Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery					
Remember / Knowledge	Understand	Apply	Analyze	Evaluate	Higher order Thinking / Creative
0.00	0.00	35.00	35.00	30.00	0.00

### Instructional Method:

- 1 The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc

**Instructional Method:**

- 2 The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.
- 3 Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory
- 4 Students will use supplementary resources such as online videos, NPTEL videos, ecourses, Virtual Laboratory.

**Supplementary Resources:**

- 1 [https://onlinecourses.swayam2.ac.in/aic20\\_sp08/preview](https://onlinecourses.swayam2.ac.in/aic20_sp08/preview)