

GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT
COURSE CURRICULUM

Course Title: Chemical Engineering Drawing
(Code: 3310502)

Diploma Programmes in which this course is offered	Semester in which offered
Chemical Engineering	First Semester

1. RATIONALE

Engineering technicians irrespective of their field of operation in an industry is expected to possess a thorough understanding of engineering drawing, which includes clear spatial visualization of objects and the proficiency in identifying various equipment and devices from their symbols on control panel, to read and interpret process flow diagram & instrumentation diagram. Besides this they are also expected to possess a certain degree of drafting skill- depending upon their job functions-in day-to-day activities. This course of Chemical Engineering Drawing is aimed at developing deeper understanding of construction and working of some of the important chemical engineering equipment and valves.

2. LIST OF COMPETENCIES

The course content should be taught and implemented with the aim to develop different types of skills leading to the achievement of the following competency:

- i. **Prepare and interpret symbols, sketches, & drawings of various equipment, valves, devices and flow diagrams for chemical engineering applications**

3. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				Total Marks
L	T	P		Theory Marks		Practical Marks		
L	T	P	C	ESE	PA	ESE	PA	100
0	0	4	4	0	0	40	60	

Legends: L-Lecture; **T** – Tutorial/Teacher Guided Theory Practice; **P** - Practical; **C** – Credit;
ESE - End Semester Examination; **PA** - Progressive Assessment

4. DETAILED COURSE CONTENTS

Not applicable as only practical

5. SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS (THEORY)

Not Applicable

6. SUGGESTED LIST OF EXERCISES/PRACTICAL/EXPERIMENTS

The exercises/practical/experiments should be properly designed and implemented with an attempt to develop different types of skills leading to the achievement of the competency. Following is the list of exercises/practical/experiments for guidance.

S. No.	Unit No.	EXERCISES/PRACTICAL
1		Draw symbols of various equipment and devices for heat exchange, mass transfer and mechanical operations for example crusher, filter press, rotary filter, conveyors, screen, distillation and absorption columns, scrubbers, dryers, condenser, heat exchanger, jacketed vessel, cyclone, ESP, pump etc. in sketch book.
2		Draw symbols of various controllers such as pressure, temperature, flow & level in sketch book.
3		Draw various types of valves such as Globe valve, Gate valve, Diaphragm valve and non-return valves in a sheet.
4		Draw sketches of different pumps such as Centrifugal, reciprocating and rotary pumps- Gear, Lobe and Vane type in a sheet.
5		Draw sketches of different size reduction equipments such as Jaw crusher, Gyratory crusher, Roll crusher, Ball mill in sketch book.
6		Draw Jacketed reactor with agitator.
7		Draw 1-1 Shell & Tube Heat exchanger.
8		Draw complete distillation tower assembly (Packed tower & Tray tower).
9		Draw process flow diagram of a continuous manufacturing process.
10		Draw a simple process & instrumentation diagram of manufacturing processes / Unit operation

7. SUGGESTED LIST OF PROPOSED STUDENT ACTIVITIES

To be decided by the concerned teacher..

8. SUGGESTED LEARNING RESOURCES**A. List of Books**

S.No.	Author	Title of Books	Publication
1	W.L. McCabe, J.C. Smith	Unit Operations of Chemical Engineering	McGraw Hill
2	M. Gopala Rao, Marshall Sittig	Outline of Chemical Technology	Affiliated East West Press

B. List of Major Equipment/ Instrument

Models or working equipments like crusher, filter press, rotary filter, conveyors, screen, distillation and absorption columns, scrubbers, dryers, condenser, heat exchanger, jacketed vessel, cyclone, ESP, pump, Globe valve, Gate valve, Diaphragm valve and non-return valves to study construction and working.

C. List of Software/Learning Websites

www.fotosearch.com/photos-images/chemical-plant.html

9. COURSE CURRICULUM DEVELOPMENT COMMITTEE

Polytechnic Faculty Members

- **Shri N. N. Hansalia**, Lecturer in chemical engineering, G. P. Rajkot
- **Shri D. H. Joshi**, Lecturer in chemical engineering, G. P. Gandhinagar
- **Shri P. M. Gadhiya**, Lecturer in chemical engineering, G. P. Rajkot

NITTTR Bhopal Co-ordinator and Faculty Member

- **Dr. K.K. Jain**, Professor & Head, Dept. of Mechanical Engg, NITTTR, Bhopal
- **Dr. Anju Rawley**, Professor, Dept. of Applied Science, NITTTR, Bhopal