GUJARAT TECHNOLOGICAL UNIVERSITY (GTU)

Competency-focused Outcome-based Green Curriculum-2021(COGC-2021)

Semester-V

Course Title: Summer Internship-II

(Course Code: 4350504)

Diploma Programme in which this course is offered	Semester in which offered
Chemical Engineering	5thSemester

1. RATIONALE

Chemical Process Industries covert raw materials in to useful products using various processes and operations. The role of chemical engineer is to operate and handle various processes, operations and equipment effectively and ensuring safe work conditions and compliance health and safety regulation. Internship is educational and career development opportunities, providing practical experience in a field of chemical engineering. It will expose Technical students to the industrial environment, which cannot be simulated in the classroom and hence creating competent professionals for the industry. It may help students to acquaint themselves with the field they are interested in. Summer Internship-II offer students the chance to put what they are learning into action, in a real-world environment. It may help student to strengthen existing soft skills that are beneficial to career, in addition to scientific and technical skills like accountability, interpersonal skills, organization skills, problem-solving skills, teamwork, creative thinking and time management skills etc. Summer Internship-II is a great way to gain hands-on experience real-life engineering workplace and supplement their engineering education. This allows students to apply academic coursework, and to gain insight into the professional life of an engineer. It will help to optimize manufacturing process thereby achieving production target with an economical cost.

2. COMPETENCY

The course should be taught and curriculum should be implemented with the aim to develop required skills so that students are able to acquire following competency:

- Operate various unit operations and processes by using standard operating procedure in the chemical process industry.
- Get hands-on training, technical experience and opportunities to learn, understand and sharpen the technical / managerial skills in a real-world environment.

3. COURSE OUTCOMES(COs)

The practical experiences and relevant soft skills associated with this course are to be implemented, so that the student demonstrates the following industry oriented COs associated with the above mentioned competency:

1. Apply basic chemical engineering knowledge to understand working of various unit operations and processes in the chemical process industry.
2. Make use of standard operating procedures for various unit operations and processes in the chemical process industry.

3. Identify engineering problems and troubleshooting in the chemical process industry.
4. Identify the various safety measures and pollution control techniques used in the chemical process industry.
5. Develop lifelong learning in team management, communication skills and supplement technical knowledge.

4. TEACHING AND EXAMINATION SCHEME

Teaching Scheme(In Hours)			Total Credits(L+T+P)	Examination Scheme				
				Theory Marks		Practical Marks		Total Marks
L	T	P	C	CA	ESE	CA	ESE	
0	0	0	3	00	00	50	50	100

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

5. MODE OF INTERNSHIP

- **Internship in the industry**

Internship in the industries/organization is to be arranged for the students of 5th semester based on internship guideline.

- **Project based internship**

Suitable topic related to Chemical Engineering like project based on industrial problem, working model of the equipment, Lab experiment and data analysis, and Design and analysis of the system/equipment, etc can be given as a mini project to the students of 5th semester.

6. INTERNSHIP GUIDELINES:

The summer internship-II for students in industries/organization is to be arranged in the beginning of 5th semester/ as per schedule given by GTU.

- Time Duration: 6 Weeks
- Training area: Large/Medium/Small Scale Chemical Process/ Allied industries

The general suggestive procedure for arranging internship is given below:

Step 1: Request Letter/ Email from the office of Institute should send to industry to allot slots of 6 weeks during the schedule given by GTU as internship periods for the students. Students request letter/profile/ interest areas may be submitted to industries for their willingness for providing the internship.

Step 2: Industry will confirm the internship slots and the number of students allocated for internships via Confirmation Letter/ Email. In case the students arrange the training themselves, the confirmation letter will be submitted by the students in the department office of the institute.

Step 3: Students on joining internship at the concerned Industry / Organization submit the Joining confirmation Letters / Email to department office.

Step 4: Students will undergo summer internship-II at the concerned Industry / Organization. Faculty mentor(s) evaluate(s) the performance of students and Evaluation Report should be maintained in department office.

Step 5: Students will prepare and submit summer internship-II report after completion of internship.
Step 6: Summer Internship-II Certificate to be obtained from industry and submit it to department office.

7. ROLE AND RESPONSIBILITY OF STUDENT

Summer Internship-II is a student centric activity. Therefore, the major role is to be played by the student.

- The student should interact with mentor to suggest choice for training and suitable Industry/Organization. If students have any contact in the industry/Organization, then same may be utilizes for getting permission for summer Internship for themselves and their peers.
- The students have to fill the consent form duly signed by their parents and submitted to department office of the institute.
- The student should follow all rules/regulation and safety procedures of the Industry/Organization during internship period.
- It is the responsibility of student to collect information from industry about manufacturing process, working of equipment/Equipment specification, raw material, maintenance procedure, organization structure etc.
- In case they face any major problem in the industry such as an accident or any disciplinary issue, they should immediately report the same to the institute.
- The student should prepare a Summer Internship-II report along with Student's Diary/ Weekly Logbook and submit to department at the time of submission.

8. EXPECTED LEARNING AREA FOR THE STUDENT DURING SUMMER INTERNSHIP-II

The following areas are expected to learn by students during summer internship program.

- Organization hierarchy
- Manufacturing process of industry
- Reaction involved in the process.
- Flow diagram of the manufacturing process
- Major equipment involved in the process
- Major utilities used in the plant
- Instrumentation and Control system in the industry
- Raw materials and products handling/ MSDS
- Raw materials and products laboratory testing
- Standard operating procedure of the process/equipment
- Permit System followed in the industry
- Hazards associated in the Industry
- Safety measures followed in the industry
- Awareness about various PPEs used in the industry
- Pollution control and effluent treatment techniques followed in the industry

9. STUDENT'S DIARY/ WEEKLY LOGBOOK

- The main purpose of writing diary is to cultivate the habit of documenting and to encourage the students to search for details. It develops the students thought process and

reasoning abilities.

- The students should record observations, impressions, information gathered and suggestions given, if any. It should contain the sketches & drawings related to the observations made by the students.
- Student's Diary/ WEEKLY LOGBOOK should be submitted by the students along with internship report at the time of submission.
- For sample format of Student's Diary/ Weekly Logbook refer Annexure-3.

10. SUMMER INTERNSHIP REPORT

After completion of Internship, the student should prepare a comprehensive report to indicate what he has observed and learnt in the internship period. Student diary will also help to a great extent in writing the internship report.
The following is the suggestive format for the internship report.

- Cover Page
- Institute Certificate
- Industry completion Certificate
- Student Declaration
- Acknowledgement
- Content page
- Chapters
- Appendix (optional)
- References (optional)

Chapter-1: Introduction to industry/organization (Types of products and services, history, turnover, location and number of employee, Organization structure of industry/organization and general plant layout etc)
Chapter-2: Manufacturing process, reaction along with its process flow diagram
Chapter-3: Major equipments/instruments used in process industries with their standard operating procedure and troubleshooting
Chapter-4: Raw materials and products handling/MSDS
Chapter-5: Safety measures and Work permit system
Chapter-6: Plant Utilities, Instrumentation and Process control system
Chapter-7: Pollution control and effluent treatment techniques

Note: The chapters and content may be change based on Type of Industry/Organization and Area of Internship.

11. EVALUATION

It will be evaluated on the basis of the following criteria:

- Attendance and regularity in maintenance of the student's diary
- Adequacy, quality of information and purposeful write-up/presentation
- Organization of the information, format, drawings, sketches, other information recorded
- Variety and relevance of learning experience/ Depth of knowledge and skills
- Practical applications, relationships with basic theory and concepts taught in the course

12. AFFECTIVE DOMAIN OUTCOMES

The following ***sample*** Affective Domain Outcomes (ADOs) are embedded in many of the above-mentioned COs. More could be added to fulfill the development of this competency.

a) Work as a leader/a team member.
b) Follow ethical practices
c) Follow and Observe safety measures
d) Good house keeping
e) Time management
f) Practice environmentally friendly methods and processes.

13. SUGGESTIVEFORMAT

The following are suggestive format for Summer Internship-II course.
Annexure-1: Student Registration From
Annexure-2: Request Letter from Institute to Industry/Organization
Annexure-3 Student's Diary/ Weekly Logbook
Annexure-4: Summer Internship-II Completion Certificate
Annexure-5: Student Declaration
Annexure-6: Summer Internship-II Report Format
Annexture-7: Suggested Evaluation Rubrics

14. PO-COMPETENCY-CO MAPPING

Semester V	Summer Internship-II (4350504)						
	PO5						
Competency &Course Outcomes	PO1 Basic&Discipline-specificknowledge	PO2 Problem Analysis	PO3 Design/ Development Of solutions	PO4 Engineering Tools, Experimentation &Testing	PO5 Engineering practices for society,sustainability& environment	PO6 Project Management	PO7 Life-long learning
CO1: Apply basic chemical engineering knowledge to understand working of various unit operations and processes in the chemical process industry	3.00	2.00	1.00	2.00	2.00	1.00	2.00
CO2: Make use of standard operating procedures for various unit operations and processes in the chemical process industry.	3.00	1.00	-	2.00	2.00	2.00	1.00

CO3: Identify engineering problems and troubleshooting in the chemical process industry.	3.00	3.00	2.00	2.00	2.00	2.00	2.00
CO4: Identify the various safety measures and pollution control techniques used in the chemical process industry.	3.00	2.00	1.00	2.00	3.00	1.00	2.00
CO-5: Develop lifelong learning in team management, communication skills and supplement technical knowledge.	2.00	1.00	1.00	1.00	-	3.00	3.00

15. COURSE CURRICULUM DEVELOPMENT COMMITTEE

GTU Resource Persons

Sr. No.	Name and Designation	Institute	Contact No.	Email ID
1	Mr. Jagdish Dattatrya Raut (Lecturer in Chemical Engineering)	Government Polytechnic, Valsad	---------	jagdish.raut@gmail.com
2	Mr. Parth Dhruvkumar Prajapati (Lecturer in Chemical Engineering)	Government Polytechnic, Valsad	---------	pdprajapati266@gmail.com

Annexure-1: STUDENT REGISTRATION FROM

[Name of the Institute]

[Name of the Department]

STUDENT REGISTRATION FROM

Title of Internship	
Type of Industry/Organization	
Enrollment Number	
Student Name	
Student Details	Contact No.:
	Communication Address:
	Parents Contact No.:
Name of Institute	
Mentor Details (Institute)	Name:
	Designation:
	Mobile No:
	Email Address:
Industry /Organization Details	Name:
	Address:
	Email:
	Contact No.
	Website:
Mentor Details (Industry)	Name:
	Designation:
	Mobile No:
	Email:

Student Signature Institute Mentor Signature

Annexure-2: REQUEST LETTER FROM INSTITUTE TO INDUSTRY/ ORGANIZATION

[Institute Letter Head]

Date: DD/MM/YYYY

To
The General Manager (HR)
_____
_____

Subject: Request for 6 Weeks Summer Internship-II for student(s) of Diploma-Chemical Engineering

Dear Sir,

In Diploma-Chemical Engineering program, Gujarat Technological University has introduced Summer Internship-II for the students in the beginning of 5th semester.

In view of the above, I request your good self to allow our following _____student(s) for internship training in your esteemed organization. Kindly accord your permission and give one week time for student(s) to join training after confirmation.

Sr No.	Name of student	Enrollment No.

A line of confirmation will be highly appreciated. You are requested to provide Summer Internship completion certificate to above student(s) after completion of internship period.

With Warm regards,

Authorized Signatory
Designation
(Name of the Institute)

INSTITUT
E SEAL

Annexure-3 STUDENT'S DIARY/ WEEKLY LOGBOOK

Week:	1 / 2 / 3 / 4 / 5 / 6	Date: to
Name of Organization		
Department/Division		
Name of Plant Head/ Supervisor/In-charge		
Main Topic: Process/Observation/Information/Drawing/Learning points		
Sign of Plant Head/Supervisor/In-charge:		

Annexure-4: SUMMER INTERNSHIP-II COMPLETION CERTIFICATE

[Industry Letter Head]

Date: DD/MM/YYYY

TO WHOM IT MAY CONCERN

This is to certify that _____, Enrollment No._____, a student of chemical Engineering Department, <Institute Name>has successfully completed his/her summer internship-II in the field of <Internship Area/Department>from <Start Date>to<End Date> (Total number of Weeks: ___) under the guidance of <Industry Mentor/Plant Head>.

During the period of her/ his internship program with us, he / she had been exposed to different processes and was found sincere, enthusiastic and dedicated toward work assigned.

We wish him/her every success in his/her life and career.

For <Industry/Organization Name>
Authorized Signature
Designation

ORGANIZATIO N SEAL

Annexure-5: STUDENT DECLARATION

[Name of the Institute]

[Name of the Department]

DECLARATION

I/We hereby declare that the Summer Internship-II report submitted along with the Internship entitled **<Internship Title>**submitted in partial fulfillment for the degree of Diploma in Chemical Engineering , Gujarat Technological University, Ahmedabad, is a bonafide record of work carried out by me/us at<Industry/Organization Name> under the supervision of <Industry / Institute Mentor Name> and that no part of this report has been directly copied from any students' reports or taken from any other source, without providing due reference.

Name of Student Signature

Annexure-6: SUMMER INTERNSHIP-II REPORT FORMAT

CoverPage<Removethis>

[SUMMER INTERNSHIP-II]

<FontSize18><1.5line spacing>

A REPORT ON
<INTERNSHIP AREA/DEPARTMENT>
<NAME OF INDUSTRY/ORGANIZATION>

<FontSize14>

Submitted by

<FontSize14><Italic>

[NAME OF THE CANDIDATE]

<FontSize16>

[GTU Enrolment Number]

<FontSize14>

In partial fulfillment for the award of the degree of

<FontSize14><1.5linespacing><Italic>

DIPLOMA IN CHEMICAL ENINEERING

<FontSize16>

in

[Name of the Department]

[Name of the Institute with City]
<FontSize14>

Institute Logo

GTU Logo

Gujarat Technological University, Ahmedabad

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[Month,Year]

Following are the guidelines for the preparation Summer Internship-II Report.

PAPER: Use A4 (210mm X 297mm) Paper.

MARGINS: Margins for pages including the regular text should be as below:

Left : 1.25 Inches

Right : 1.0 Inch

Top : 1.0 Inch

Bottom: 1.0 Inch

PREPARATION OF CHAPTERS

Color:

All the text including Tables should be Black prints. However, Graphs and Figures can have color prints.

Font:

Chapter Headings : Times New Roman 16pts, bold print all capitals

Section Headings : Times New Roman 14pts, bold print all capitals

Subsection Headings: Times New Roman 12pts, bold print leading capitals (only first letter in each word should be capital

Regular Text : TimesNewRoman12pts, normal prints

Special Text : Times New Roman Italics 12 pts (for foot notes, symbols, quotes, Mathematical notations….)

Annexture-7: SUGGESTED EVALUATION RUBRICS

Suggested Evaluation Rubrics
(Institute/Industry Mentor)

Enrollment No: _____

Name of Student: _____

Date of Evaluation: _____

Sr. No.	Parameter	Excellent	Good	Average	Poor	Very Poor	Obtained Marks
	Mark	5	4	3	2	1	
1	Student regularity, Proactiveness/ responsiveness towards the given tasks during the Internship period						
2	Regularity in maintenance of the diary/Log book						
3	Quality and organization of information						
4	Purposeful writeup, content, drawing and sketches in the internship report						
5	Depth of technical knowledge and skills						
6	Variety and relevance of learning experience						
7	Quality of presentation						
8	Development of soft skills like communication, presentation, team work/leadership and management skills						
9	Application of basic theory and concepts of chemical engineering						
10	Quality of work/ Practical applications in forms of Outcome achieved.						
	Total Marks Obtained Out of 50 (Minimum Passing Marks: 20)						

Name of Mentor/Examiner:

Signature of Mentor/Examiner: