GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Ceramic Workshop

Level: Diploma

Branch: Ceramic Technology

Course / Subject Code : DI02C52021(Only for C to D Students)

Course / Subject Name : Ceramic Workshop

w. e. f. Academic Year:	2024-2025
Semester:	2nd
Category of the Course:	PCC

Prerequisite:	-
Rationale:	Diploma Ceramic Engineers are expected to work most in Ceramic Industries. They deal with production of Ceramic Products. This course intends to impart basic know-how of various equipments and their use in manufacturing Process. Ceramic Workshop practice is the backbone of the real industrial environment which helps to develop and enhance relevant technical hand skills required by the technician working in the Ceramic industries. This course intends to impart basic know-how of various equipments and their use in different Sections of manufacturing.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level
01	Use Pot mill for Mixing and Grinding.	U,A
02	Prepare moulds using Plaster of Paris.	U,A
03	Operate Potter wheel in relevant applications.	U,A
04	Prepare handmade models of ceramic articles.	U,A
05	Prepare decorative clay articles and apply glaze on it.	U,A

**Revised Bloom's Taxonomy (RBT)*

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
				Theory		Tutorial / Practical		
L	T	PR	C	ESE (E)	PA / CA (M)	PA/CA (I)	ESE (V)	
0	2	4	4	0	0	50	50	100

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	**Introductory Workshops** - Clay Types like ball clay, china clay, than clay. - Preparation of clay. - Basic Techniques: Learn fundamental hand-building methods, potter's wheel. - Understanding the basic nature of POP - Plaster of paris slurry preparation. - Brick composition.	6	20
2.	**Crushing and Grinding** - Different types of crusher's i.e. jaw crushers, roller crusher, edge runner mill to reduce particle size. - Different milling i.e. ball mill, pot mill.	6	20
3.	**Shaping and Drying** - Different types of shaping methods i.e. hand molding, slip casting, extrusion, hydraulic pressing. - Different types of dryers tunnel dryer, oven.	6	20
4.	**Engobe, Glazing and decoration** - Preparation of engobe and glaze. - Different types of applying glaze i.e. brushing, dipping, and spraying. - Different types of decoration methods i.e. stencil, brushing, stamping.	6	20
5	**Firing and defects** - Understanding the different firing schedules. - Different types of defects i.e. bubbles, crazing, pinholes, blisters.	6	20
	Total	**30**	**100**

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks (in %)					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
10	20	50	0	0	20

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

(a) Books:

Sr. No.	Title of Book	Author	Publication with place, year and ISBN
1	The Ceramics Bible	Louisa Taylor	Chronicle Books; Illustrated ISBN-13 : 978-1452101620
2	Industrial Ceramics	Sonia S. Singer, Felix Singer	Springer Netherlands ISBN : 978-94-017-5257-2
3	Pottery for Beginners	Kara Leigh Ford	Page Street Publishing ISBN-10 : 1645673022
4	Ceramic Materials	C. Barry Carter	Springer ISBN-10 : 9781461435228

(b) Open source software and website:

1. https://en.wikipedia.org/wiki/Pottery
2. https://ceramicartsnetwork.org
3. http://en.wikipedia.org/wiki/ceramic
4. https://sacmi.com/en-US/ceramics

Suggested Course Practical List:

No.	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. required
1	Prepare a mug by hand molding process and fire it.	I,V	06
2	Prepare clay pot using potter's wheel and fire it.	I,V	06
3	Prepare one piece mould by using plaster of Paris.	I	06
4	Prepare engobe slurry of given composition using pot mill.	II	04
5	Prepare glaze slurry of given composition using pot mill.	II	04
6	Prepare any decorative glaze articles and fire it.	IV,V	08
7	Prepare button from different clays.	III,V	06
8	Prepare a brick from given composition.	I,V	06
9	Prepare cup by using slip casting method and decorate by applying glaze and fire it.	III,V	08
10	Visit clay product industry and make an industrial report.	All unit	06
Total		**60**	

List of Laboratory/Learning Resources Required:

Sr. No.	Equipment Name with Broad Specifications
1	Digital Balance weighing capacity up to 5kg. (accuracy +/- 1gm)
2	Rapid pot mill double jar mill grinding capacity 1000ml.
3	Potter's wheel with 10" wheel diameter.
4	Wooden mould

5	Hot air oven Temperature Ambient up to 250 °C
6	Furnace working temperature 800-1000°C
7	Hydraulic Button press machine
8	Pop mould

Suggested Project List:

1. Prepare clay sculpture.
2. Prepare vases, bricks, pots, and bowls.
3. Industrial visit to observe the working and manufacturing process.

Suggested Activities for Students:

1. Prepare charts for various equipments.
2. Collect data for principal and functions of various ceramic equipments from internet.
3. Give seminar on any relevant topics
4. Library survey to study about the basics of ceramics.
5. Industrial visit to observe the working and manufacturing process

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