GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT
COURSE CURRICULUM

Course Title: Plastic Engineering Workshop
(Code: 3322302)

Diploma Programme in which this course is offered	Semester in which offered
Plastic Engineering	Second Semester

1. RATIONALE

In order to have a balanced overall development of diploma engineers, it is necessary to integrate theory with practice. General workshop practices with Plastic Engineering concepts are included in the curriculum in order to provide hands-on experience about use of different tools and measuring instruments. This course aims at developing general manual and machining skills in the students. Besides above, the development of dignity of labor, precision and safety at work place, team work and development of right attitude are the other objectives.

2. COMPETENCY

The workshop content should be taught and implemented with the aim to develop different skills so that students are able to acquire following competency

i. Use the basic machines & hand tools with care.

3. 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	ESE	PA	ESE	PA	100
0	0	4	4	00	00	40	60	

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

Note: It is the responsibility of the institute heads that marks for **PA of theory** & **ESE and PA of practical** for each student are entered online into the GTU Portal at the end of each semester within the dates specified by GTU.

4. DETAILED COURSE CONTENT

Unit	Major Learning Outcomes	Topics and Sub-topics
Unit – I **Carpentry Shop**	1a. Perform the various operations like Marking, planning, sawing and chiseling With care	1.1 Marking, planning, sawing and chiseling 1.2 Preparation of wooden mould elements 1.3 Safety precautions in carpentry shop
Unit– II **Fitting Shop**	2a. Identify different metals& plastics for fitting shop 2b. Measure the fitting jobs 2c. Select appropriate file for different applications	2.1 Identification of different metals & plastic (i.e. Steel, Brass, Copper, Aluminum, Plastic) 2.2 Identification of different shapes (i.e. Flat, Angle, Tee, Channel, Bar Girder, Square, Z-Section) 2.3 Demonstration of holding devices and files 2.4 Safety precautions in Fitting shop
Unit– III **Welding Shop**	3a. Weld two metal parts with care	3.1 Introduction to welding equipment 3.2 Types of welding 3.3 Safety precautions during welding
Unit – IV **Fabrication Shop**	4a. Prepare FRP articles with care	4.1 Preparation of different shaped products by using Fiber Reinforced Plastic (FRP) 4.2 Safety precautions in the Fabrication shop

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

---------- Not Applicable----------

6. SUGGESTED LIST OF EXERCISES/PRACTICALS

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 above mentioned competency. Following is the list of exercises/practical/experiments for guidance.

S. No.	Unit No.	Practical Exercise/Experiment	Approx Hours Required
1	I	Prepare wooden block	06
2		Prepare wooden mould elements (Bolster)	06
3	II	Prepare dimensioned rectangular or square job of MS	08
4		Filing the job by straight edge & angle	06
5		Drilling on metal plate	04
6		Tapping on metal plate	04
7		Cutting & drilling of Acrylic sheet	04
8	III	Joining of two metal pieces by welding	04
9	IV	Prepare FRP sheet as per dimensions	08
10		Fabrication work by using FRP sheet	06
		Total	**56**

7. SUGGESTED LIST OF STUDENT ACTIVITIES

1. Students will prepare different jobs as per the guidelines provided.
2. Students will prepare the chart on safety precautions & rules.
3. Students would prepare the list of major machines/tools used with their specifications and type.

8. SUGGESTED LEARNING RESOURCES

A. List of Books

Sr. No.	Title of Book	Author	Publication
1.	Workshop Technology I,II,III	S K Hajra, Choudhary and A K Chaoudhary	Media Promoters and Publishers Pvt. Ltd., Bombay
2.	Workshop Technology	HS Bawa	Tata McGraw Hill Publishers, New Delhi
3.	Basic Workshop Practice Manual	T Jeyapoovan	Vikas Publishing House (P) Ltd., New Delhi
4.	Workshop Technology	B.S. Raghuwansh	Dhanpat Rai and Co., New Delhi
5.	Plastics engineering handbook	Joel Frados	Van Nostrand Reinhold Company
6.	Plastics materials and processes	S.S. Schwartz S.H. Goodman	Van Nostrand Reinhold Company

B. List of Major Equipment/ Instrument

1. Basic work shop tools (hammer, chisel, hand drill, taps, measuring instruments etc)
2. Vise fitting
3. Welding machine
4. Jig
5. Wooden blocks
6. Metal plates & bars
7. Acrylic Sheets
8. FRP Sheet

C. List of Software/Learning Websites

http://www.fao.org/docrep/012/al360e/al360e.pdf

8. COURSE CURRICULUM DEVELOPMENT COMMITTEE

Faculty Members from Polytechnics

- **Prof. A.S.Amin**, Lecturer in plastics, Govt. polytechnic, Ahmedabad
- **Prof. M.K.Thakarar**, Lecturer in plastics, Govt. polytechnic, Valsad

Co-ordinator and Faculty Members from NITTTR Bhopal

- **Dr. Anju Rawlley**, Professor Dept. of Applied Sciences