

GUJARAT TECHNOLOGICAL UNIVERSITY (GTU)**Competency-focused Outcome-based Green Curriculum-2022 (COGC-2021)**

Semester -V

Course Title: Industrial Management & Organisational Behaviour

(Course Code: 4355504)

Diploma programmer in which this course is offered	Semester in which offered
Fabrication Technology	5 th Semester

1. RATIONALE

There is an organizational structure in every industry whether it is micro, small, medium or large scale industry. The function of every organization is performed by its management. Student has to understand the organizational structure and its management in fabrication industry to perform his duties in proper way. In fabrication industry the project are different like different types of process equipments, structure, industrial piping, ship construction etc. Every project requires different resources and its planning and project management is must for its timely completion. Student has to work as supervisor, shop in charge or manager in the fabrication industry. In every role he / she have to deal with human resource. Study of industrial psychology is necessary for understanding human behavior i.e. individual behavior and group behavior. Fabrication engineer has to lead the team for successful discharge of his duties. He has to motivate the workers and team members for getting more than 100 % quality output. The role of supervisor is a joining link between workman and management. Proper communication required among the team and with the management also. Student must have knowledge and skill regarding different methods of verbal and non verbal communication. Understanding of organisational behavior makes student capable and confident to work as supervisor. Training is must for every engineer to enhance his skill. Training plays a vital role in nurturing the career of engineer in fabrication technology field. This course develops the knowledge, skill and proper attitude in student to work as engineer in fabrication industry.

2. COMPETENCY

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

Manage projects, materials, and human resources by using concepts and techniques of Industrial management and organisational behavior to improve the productivity, quality and work culture.

3. COURSE OUTCOMES (COs)

The practical exercises, the underpinning knowledge and the relevant soft skills associated with the identified competency are to be developed in the student for the achievement of the following COs:

- a) Describe Management, organisation and Project Management.
- b) Describe Industrial Psychology required for Fabrication engineer.
- c) Manage Human Resources in fabrication Industries.

- d) Develop employable leadership and supervisory quality as a fabrication shop Supervisor.
e) Describe necessity of training for fabrication shop supervisor.

4. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P/2)	Examination Scheme				
L	T	P		Theory Marks		Practical Marks		Total Marks
			C	CA	ESE	CA	ESE	
4	0	2	5	30*	70	25	25	150

(*): Out of 30 marks under the theory CA, 10 marks are for assessment of the micro-project to facilitate integration of COs and the remaining 20 marks is the average of 2 tests to be taken during the semester for the assessing the attainment of the cognitive domain UOs required for the attainment of the COs.

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

5. SUGGESTED PRACTICAL EXERCISES

The following practical outcomes (PrOs) are the sub-components of the COs. These PrOs need to be attained to achieve COs.

Sr. No.	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. Required
1	Study concept of management and prepare organisation chart for different types of fabrication industry.	1	2
2	Draw Bar chart from the given data.	1	2
3	Draw Gantt progress chart from the given data.	1	2
4	Find out project duration from given data by CPM/PERT.	1	4
5	Study individual or group human behaviour with different aspects of industry and business to understand industrial psychology.	2	2
6	Study industrial discipline required in fabrication industries.	2	2
7	Identify causes of stress with respect to a given situational case study of fabrication industry	3	2
8	Demonstrate the importance of verbal communication through activity based learning a. Debate on a given technical topic b. Group activity on passing the message from person to person, etc.	3	2
9	Demonstrate the importance of non- verbal communication through activity based learning: Guessing a given technical term, etc.	3	2
10	Study of different duties of fabrication shop supervisors.	4	2

Sr. No.	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. Required
11	Study of different qualities of fabrication shop supervisors.	4	2
12	Study the objectives of supervisor training in fabrication industries and identify different area of the training.	5	2
13	Study of different methods of fabrication shop supervisor training and prepare different formats of training.	5	2
Total Hours			28

Note

- i. More **Practical Exercises** can be designed and offered by the respective course teacher to develop the industry relevant skills/outcomes to match the COs. The above table is only a suggestive list.
- ii. Boiler suit, safety shoes and necessary tools & instruments are compulsory while attending laboratory and has to be brought by students (Annexure-1).

The following are some **sample** 'Process' and 'Product' related skills (more may be added/deleted depending on the course) that occur in the above listed **Practical Exercises** of this course required which are embedded in the COs and ultimately the competency.

Sr. No.	Sample Performance Indicators for the PrOs	Weightage in %
For PrOs no: 1,2,3,4,5,6,7,8,9,10,11,12,13		
1	Knowledge of experiment	30
2	Quality of report	30
3	Participation	20
4	Originality	10
5	Punctuality	10
Total		100

6. MAJOR EQUIPMENT/ INSTRUMENTS REQUIRED

This major equipment with broad specifications for the PrOs is a guide to procure them by the administrators to user in uniformity of practical's in all institutions across the state.

Sr. No.	Equipment Name with Broad Specifications	PrO. No.
1.	Necessary Stationary, Graph paper, Calculator, etc.	All

7. AFFECTIVE DOMAIN OUTCOMES

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

- a) Follow safety practices in laboratory.
- b) Practice good housekeeping.
- c) Work as a leader/a team member.
- d) Maintain tools/equipment
- e) Follow ethical practices

The ADOs are best developed through the laboratory/field based exercises. Moreover, the level of achievement of the ADOs according to Krathwohl's 'Affective Domain Taxonomy' should gradually increase as planned below:

- i. 'Valuing Level' in 1st year
- ii. 'Organisation Level' in 2nd year.
- iii. 'Characterization Level' in 3rd year & 4th year.

8. UNDERPINNING THEORY

The major underpinning theory is given below based on the higher level UOs of *Revised Bloom's taxonomy* that are formulated for development of the COs and competency. If required, more such UOs could be included by the course teacher to focus on attainment of COs and competency.

Unit	Unit Outcomes (UOs)	Topics and Sub-topics
Unit-I Management & Organisation	1a. Describe concepts of management. 1b. Describe characteristics, process and functions of management. 1c. Describe importance of managerial skills. 1d. Describe principles and process of organisation. 1e. Describe various types of organisation structure. 1f. Draw Bar chart and Gantt progress chart. 1g. Calculate project duration by CPM/PERT.	Management 1.1 Introduction 1.2 Definition of management 1.3 Process of management 1.4 Characteristic of management 1.5 Difference & Relationship between Administration, Management & Organisation 1.6 Level of management 1.7 Managerial skills Organisation 1.8 Definitions 1.9 System approach applied to an organisation 1.10 Necessity of organisation 1.11 Essential elements of good organisation 1.12 The process of organisation 1.13 Principles of organisation 1.14 Formal and informal organisation 1.15 Advantages of good organisation

Unit	Unit Outcomes (UOs)	Topics and Sub-topics
		1.16 Organisation structure 1.17 Types of organisation structure 1.18 Basic rules / principles for use of committee 1.19 Departmentation Project Management 1.20 Bar chart 1.21 Gantt progress chart 1.22 Line of balance 1.23 CPM and PERT 1.24 Terms related with CPM and PERT 1.25 Rules or Network construction 1.26 Programme Evaluation and Review Technique (PERT) 1.27 Estimation of activity time in PERT 1.28 Difference Between CPM and PERT 1.29 Resource Allocation 1.30 Resource Smoothing
Unit– II Industrial Psychology	2a. Distinguish between individual and group behaviour. 2b. Describe aims and objectives of Industrial psychology. 2c. Describe theories of motivation. 2d. State importance of high morale and good industrial relation amongst workers. 2e. Describe handling of industrial disputes and worker grievances.	2.1 Introduction 2.2 Scope of Industrial psychology 2.3 Human Behaviour 2.3.1 Individual behaviour 2.3.2 Group behavior 2.4 Aims & Objective of Industrial Psychology 2.5 Human Relations 2.6 Theories of Motivation 2.7 Morale 2.8 Industrial relations 2.9 Industrial Dispute 2.10 Handling of Workers Grievances 2.11 Workers Participation In management 2.12 Industrial discipline 2.13 Corporate culture 2.14 Attitude 2.15 Self-esteem and assertiveness
Unit-III Human Resource Management	3a. Describe importance and scope of Human Resource management in industry 3b. Describe the Objectives of	3.1 Importance and scope of human resource management in industrial environment 3.2 Impact of human factors on

Unit	Unit Outcomes (UOs)	Topics and Sub-topics
	Training and Development 3c. Describe the importance of effective communication skills	productivity and industrial harmony 3.3 Stress management 3.3.1 Concept of stress management 3.3.2 Attributes of stress 3.3.3 Stress measuring techniques 3.3.4 Techniques to relieve stress 3.4 Communication Skills 3.4.1 Defining the term communication 3.4.2 Importance of Effective Communication 3.4.3 Process of communication 3.4.4 Barriers to Communication 3.4.5 Types of communication 3.4.6 The 7C's of effective communication 3.5 Group discussions 3.6 Personal interview etiquettes
Unit-IV Leadership and supervisory	4a. Explain function and quality of leadership. 4b. Describe duties and qualities of supervisor. 4c. Distinguish between leadership and management.	4.1 Introduction of leadership 4.2 Definition of leadership 4.3 Function of Leadership 4.4 Qualities of leadership 4.5 Leadership vs. Management 4.6 Styles of Leadership 4.7 Leadership Grid 4.8 Supervision 4.9 Duties of foreman/supervisor 4.10 Essential Qualities Of foreman.
Unit- V Training and career development	5a. Describe how to identify training needs of workers. 5b. Explain need, guidelines, Objectives, methods, and advantages, and of Training and Development.	5.1 Introduction 5.2 Needs for training 5.3 Objective of training and development 5.4 Advantage of training, 5.5 Guideline for training worker 5.6 Various methods of training a worker 5.7 Foreman or Supervisory training

Unit	Unit Outcomes (UOs)	Topics and Sub-topics
		5.8 Executive or managers training and development 5.9 Methods of Training executives

9. SUGGESTED SPECIFICATION TABLE FOR QUESTION PAPER DESIGN

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	Management & Organisation	22	3	18	7	28
II	Industrial Psychology	8	3	8	0	11
III	Human Resource Management	8	3	7	0	10
IV	Leadership and supervisory	8	3	7	0	10
V	Training and career development	10	4	4	3	11
	TOTAL	56	16	44	10	70

Legends: R=Remember, U=Understand, A=Apply and above (Revised Bloom's taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks and marks at different taxonomy levels (of R, U and A) in the question paper may vary slightly from above table.

10. SUGGESTED STUDENT ACTIVITIES

Other than the classroom and laboratory learning, following are the suggested student-related **co-curricular** activities which can be undertaken to accelerate the attainment of the various outcomes in this course: Students should perform following activities in group and prepare reports of about 5 pages for each activity. They should also collect/record physical evidences for their (student's) portfolio which may be useful for their placement interviews:

- Prepare solutions of different assignments given by subject faculty.
- Download videos showing correct practices for different industrial organisational behaviour.
- Visit at local manufacturer place and prepare the report on it.
- Fill up the lab manual.

11. SUGGESTED SPECIAL INSTRUCTIONAL STRATEGIES (if any)

These are sample strategies, which the teacher can use to accelerate the attainment of the various outcomes in this course:

- a) Massive open online courses (**MOOCs**) may be used to teach various topics/sub topics.
- b) Guide student(s) in undertaking micro-projects.
- c) '**L**' in **section No. 4** means different types of teaching methods that are to be employed by teachers to develop the outcomes.
- d) About **20% of the topics/sub-topics** which are relatively simpler or descriptive in nature is to be given to the students for **self-learning**, but to be assessed using different assessment methods.
- e) With respect to **section No.10**, teachers need to ensure to create opportunities and provisions for **co-curricular activities**.

12. SUGGESTED MICRO-PROJECTS

Only one micro-project is planned to be undertaken by a student that needs to be assigned to him/her in the beginning of the semester. In the first four semesters, the micro-projects are group-based (group of 3 to 5). However, **in the fifth and eighth semesters**, the number of students in the group should **not exceed three**.

The micro-project could be industry application based, internet-based, workshop-based, laboratory-based or field-based. Each micro-project should encompass two or more COs which are in fact, an integration of PrOs, UOs and ADOs. Each student will have to maintain dated work diary consisting of individual contribution in the project work and give a seminar presentation of it before submission. The duration of the micro project should be about **14-16 (fourteen to sixteen) student engagement hours** during the course. The students ought to submit micro-project by the end of the semester to develop the industry-oriented COs.

A suggestive list of micro-projects is given here. This has to match the competency and the COs. Similar micro-projects could be added by the concerned course teacher:

- a) **Chart making:** Student have to prepare a chart on management different principles, various theories, etc. given by the subject teacher.
- b) **Video Preparation:** Student has to prepare his/her video on management different principles, various theories, etc. given by the subject teacher.
- c) **E-learning projects:** Students have to use internet and other online resources for preparation of report and/or download video on the topic given by the subject teacher within the syllabus or beyond the syllabus.
- d) **Report preparation:** Student has to use different books, technical magazine, journals etc. for preparation of a report on the topic given by the subject teacher within the syllabus or beyond the syllabus.
- e) **Power point presentation:** Students has to prepare a power point presentation of 10 to 15 slides on the topic given by the subject teacher within the syllabus or beyond the syllabus. In the end of presentation student has to ask at least 3 to 5 MCQ based question to identify the gain of listeners at the end presentation.

13. SUGGESTED LEARNING RESOURCES

Sr. No.	Title of Book	Author	Publication with place, year and ISBN
1	Industrial Engineering and Production Management	M.Mahajan	Dhanpatrai Pub. Pvt. Ltd.
2	Industrial Management and Organisational Behaviour	K.K. Ahuja	Khanna Pub. Pvt. Ltd.
3	Organisational Behavior Concept Theory and Practices	Nirmal Sing	Deep And Deep Pub. Pvt. Ltd.
4	Organisational Behavior	Dr. K. Aswathappa	Himalaya Publishing House
5	Industrial Engineering & Management	O.P. Khanna	Dhanpatrai Pub. Pvt. Ltd.
6	Management and Organisational Behaviour	P. Subba Rao	Himalaya Publishing House
7	Industrial Engineering and Organisation Management	Dr. S. K.Sharma	-
8	Operation Research	Paneerselvam	-
9	Communication Skills Vol.1	Tabitha Wangare Wambui Alice W. Kibui Elizabeth Gathuthi	Lambert Academic Publishing

14. SOFTWARE/LEARNING WEBSITES

<https://youtu.be/-sLHfYnxh8s>
<https://youtu.be/Ws2gVrVzYbo>
<https://youtu.be/CRpqsuM36oo>
<https://youtu.be/ZzWpGm-jndQ>
<https://youtu.be/Fa8E3tCDlpo>
<https://youtu.be/wcP976S8DsM>
<https://youtu.be/FLRtMw8dD3E>
<https://youtu.be/o2SiQ2EBrs8>
<https://youtu.be/Fa8E3tCDlpo>
<https://youtu.be/FiPPfxWgefA>
<https://youtu.be/6J-VvleH06k>
<https://youtu.be/Bxm3j8JOXs4>
<https://youtu.be/bg4agsL601l>
<https://youtu.be/E5mvG6jrDjo>
<https://youtu.be/ekZsL8Oy3YQ>
https://youtu.be/w_wlMveGlrI
<https://youtu.be/lqC2cfwllG>

<https://youtu.be/oQR0WbYhXwQ>

<https://youtu.be/bIM7AwCL8Z8>

<https://youtu.be/JoN9BSVziU>

<https://youtu.be/pGItpYlgVg>

<https://youtu.be/ucmrLRxhkp4>

<https://youtu.be/87saCYFw6s>

15. PO-COMPETENCY-CO MAPPING

Semester V	Industrial management & Organisational Behaviour (Course Code: 4355504)						
	POs						
Competency & Course Outcomes	PO 1 Basic & Discipline specific knowledge	PO 2 Problem Analysis	PO 3 Design/development of solutions	PO 4 Engineering Tools, Experimentation & Testing	PO 5 Engineering practices for society, sustainability & environment	PO 6 Project Management	PO 7 Life-long learning
Competency	Manage projects, materials, and human resources by using concepts and techniques of Industrial management and organisational behaviour to improve the productivity, quality and work culture.						
CO1) Describe Management, organisation and Project Management.	3	2	-	-	1	2	2
CO2) Describe Industrial Psychology required for Fabrication engineer.	3	-	-	-	2	2	2
CO3) Manage Human Resources in fabrication Industries.	3	-	-	-	2	2	2
CO4) Develop employable leadership and supervisory quality as a fabrication shop Supervisor.	3	-	-	-	1	2	2
CO5) Describe necessity of training for fabrication shop supervisor.	3	-	-	-	1	1	3

Legend: '3' for high, '2' for medium, '1' for low and '-' for no correlation of each CO with PO.

16. COURSE CURRICULUM DEVELOPMENT COMMITTEE**GTU Resource Persons**

S. No.	Name and Designation	Institute	Contact No.	Email
1.	Mr.Kapilkumar B. Pipavat Lecturer in Fabrication Technology	Sir Bhavsinhji Polytechnic Institute Bhavnagar	9427343525	kbpipavat.bpti@gmail.com
2.	Mr. Rohankumar B. Zapadiya Lecturer in Fabrication Technology	Sir Bhavsinhji Polytechnic Institute Bhavnagar	9033219351	rohan.zapadiya@gmail.com
3.	Mr. Parthiv T. Trivedi Lecturer in Fabrication Technology	Sir Bhavsinhji Polytechnic Institute Bhavnagar	9924185501	trivediparthivbpti@gmail.com

ANNEXURE-1

❖ SAMPLE SAFETY CONTRACT:

(To be filled by the students and submitted to concerned faculty/staff)

-- Use for reference purposes only --

- 1. You have to read and sign the safety contract.
- 2. The safety contract says that you understand that safety is your responsibility.
- 3. The safety contract to be signed before you carry out any work in the laboratory and if you don't observe and obey the safety rules, you will not be allowed in the laboratory.

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Safety Contract

Date: _____

Name of Institute: _____

Name of Course with Code: Industrial Management & Organisational Behaviours (4355504)

Name of Faculty/Staff with Designation: 1. _____

2. _____

3. _____

I RECOGNIZE THAT:

- 1. Safety is my responsibility when using a tool.
- 2. Safety regulations have been provided to me.
- 3. The possibility of accident and injury increases if I do not follow all the safety guidelines.
- 4. I must act responsibly to ensure my own safety & the safety of others in the work area.

I AGREE TO:

- 1. Never work in the shop without my faculty's/ Instructor's supervision.
- 2. Read and practice all the safety regulations that have been distributed to me in this course or have been posted in the work areas.
- 3. Act in a responsible manner at all times in the laboratory.
- 4. Follow all instructions given by the faculty/Instructor.
- 5. Immediately report any unsafe condition or activity to my faculty/Instructor.
- 6. Wear eye protection at all times when working with tools or working anywhere near someone who is using tools.
- 8. Cut or Tie back long hair, remove jewellery, secure loosed clothing, and wear boiler suit & safety shoes in the laboratory.
- 9. Clean all work areas and put equipment away before leaving the laboratory.

I, _____, have read and agree with all the safety instructions.

Particulars:

Programme: _____

Batch No.: _____

Enrolment No.: _____

Student Signature _____