

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**INDUSTRIAL ENGINEERING**  
**B. E. SEMESTER: VII**

Subject Name: **Work System Design**

Subject Code: **171502**

Teaching Scheme				Evaluation Scheme			
Theory	Tutorial	Practical	Total	University Exam (E)		Mid Sem Exam (Theory) (M)	Practical (Internal)
				Theory	Practical		
4	0	2	6	70	30	30	20

Sr. No	Course Content	Total Hrs.
1.	<b>Work Study - Scope:</b>  Introduction, Work study and (I) Top management (II) Middle Mgt. (III) Workers (IV) Personnel, Work Study_Techniques.	3
2.	<b>A) Method Study:</b>  Introduction , Work simplification, Selection of Job, Economic Consideration, Design Consideration, Production Consideration, Human Consideration.  Search for a job for method study recording techniques, Process chart Construction of Operation Process Chart – Examples & uses, Flow Process Chart – Examples & uses, Flow diagram – Examples & uses. Critical examination, Procedure of investigation, Templates and Models.	6  11
	(B) Movements of workers in shops. Construction of string diagram, Travel chart, Man & Machine chart, Multiple Activity chart.	4
	(C) Motion Economy, use of human body, arrangement of work place, design of tools and equipments, Two handed process chart, work station design.	6
	(D) Cycle graph and chronocycle graph, Therbligs, Micromotion study, SIMO chart Memo motion study.	4
3.	<b>(A) Work Measurement :</b>  Introduction, Techniques of W.M., objectives and uses of Time study, Time Study Equipments, Procedure for Time study, Selection of Job for T.S. , Selection of Operator Recording of Information, Breaking operation in to elements, Choice of Elements, Number of readings, Procedure of using	22

	and its methods, Training in Rating, Allowances and types, Calculation of standard Time.	
	<p><b>(B)Other Methods of Work Measurement:</b></p> <p>Synthesis, standard data, Production interruption study, analytical estimation, work sampling, statistical concepts, confidence limits, number of observations, P.M.T.S., M.T.M., W.F.S.</p> <p>Industrial visits to be organized to understand the above topics practically, and assessment of the study during visit will carry weightage in Theory and Practical exams.</p>	8

### Reference Books:

1. Work study by ILO
2. Work study by R.C. Patel
3. Workstudy by Suresh Dalela
4. Work study and Ergonomics by S.K. Sharma and Savita Sharma