Course Type	Course Code	Name of the Course	L	T	P	Credit
DE	OMED609	Work System Design	3	0	0	3

Course Objectives
Work System Design : 1. Deals with systematic examination of work methods for effective and efficient resource use. 2. Focuses on finding performance standards for work carried out. 3. Examines what is done, how it is done, and standard time required. 4. Provides in-depth analysis of elements, factors, resources, and relationships affecting efficiency. 5. Scientifically establishes time for qualified workers at defined working rates. 6. Includes ergonomic aspects in work system design contents. 7. Applies to both manufacturing and service sector industries.
Learning Outcome
1. Students will systematically examine work methods to improve efficiency and resource utilization. 2. Students will establish performance standards including standard times for work elements. 3. Students will analyze work elements, factors, resources, and relationships affecting productivity. 4. Students will scientifically determine time required for qualified workers at defined rates. 5. Students will apply ergonomic principles to optimize work system design. 6. Students will evaluate work systems in both manufacturing and service sectors. 7. Students will identify improvements in how work is performed for better effectiveness. 8. Students will integrate time standards and ergonomics for comprehensive work analysis.

Unit No.	Topics to be covered	No. of lecture videos	Video time (Minutes)	Learning Outcomes
1	Introduction to Work System Design, Concept & Measurement of Productivity	5	155	Understand the fundamentals of productivity and how to measure it using various models and metrics
2	Factors Influencing Productivity, Causes, Improvement Techniques, Numerical Problems, and Case Study	5	152	Identify productivity influencers, apply improvement techniques, and analyze real-world productivity
3	Work Study: Concepts, Steps, Work Content, Techniques, and Human Aspects	5	178	Learn the concept of work study, its human factors, and its role in improving efficiency
4	Method Study: Concepts, Steps, Recording Techniques, and Operation Process Charts	5	182	Apply method study tools to analyze and improve workflows using process charts
5	Flow Process Charts, Two-Handed Process Charts, Multiple Activity Charts, Flow Diagrams	5	175	Utilize advanced charting methods to evaluate and optimize multi-step operations
6	String Diagrams, Motion Economy Principles, Micro-Motion Study, Therbligs, SIMO Charts	5	171	Analyze motion using therbligs and SIMO charts to improve workplace ergonomics and reduce fatigue
7	Memo-Motion, Cycle Graphs, Chrono-Cycle Graphs, Critical Examination Techniques, Installation of Improved Methods	5	161	Evaluate existing methods critically and implement improved systems using visual motion studies

8	Work Measurement Concepts, Time Study Techniques and Equipment, Performance Rating	5	133	Understand time study methods and accurately measure job durations and performance levels
9	Standard Time Computation, Allowances, Performance Rating, Case Study	5	157	Compute standard time incorporating allowances, and validate with case-based applications
10	Work Sampling, Synthetic Data, PMTS, MTM, MOST	5	158	Learn and apply modern work measurement systems like PMTS, MTM, and MOST
11	Ergonomics: Basics, Anthropometry, Industrial Ergonomics, Man-Machine Systems	5	172	Apply ergonomic principles and anthropometric data to design efficient and safe work systems
12	Case Studies: Office Chair, Crane Cabin, Car Seat, Computer System, Assembly Line	5	155	Analyze real-world ergonomic and system design examples to reinforce work study and design principles
	Total	60	1949	

Textbooks:

1. 1 Introduction to Work Study, International Labour Organization (ILO), *Details*: A classic and authoritative book covering method study, work measurement, productivity, and ergonomics.
2. Groover, M.P., Work Systems and the Methods, Measurement, and Management of Work, Pearson Education.

Reference Books:

1. Kanawaty, G., Introduction to Work Study, International Labour Office.
2. Niebel, B.W. and Freivalds, A., Methods, Standards, and Work Design, McGraw-Hill.