Course Type	Course Code	Name of Course	L	T	P	Credit
DP	NMSC512	Work Study and Ergonomics Lab	0	0	3	1.5

Course Objective
Productivity improvement in an enterprise is a function and a result of management efficiency, synonymous with good management. The objectives of this practical course are for students to acquire the fundamentals of productivity concepts, principles, tools, and techniques.
Learning Outcomes
On completion of this practical course, the students shall be able to calculate the basic work content, analyze the existing methods of working and develop an improved method, and calculate basic, allowed and standard time, of a specific job. The students will also be able to analyze and calculate the level of risk in the job causing stress, fatigue and musculoskeletal disorders and design appropriate work systems.

Unit No.	Topics to be Covered	Lab Hours	Learning Outcome
1	Method Study of machining operation, Application of multiple activity chart in improving the present method, Application of motion economy principles in improving the design of work place layout, Time study and rating practices	6	Principles of Method Study, Motion Economy and Work Measurement
2	Assessment of ideal weight & obesity of the subjects, Assessment of body fat, Generation of hand grip strength database, Generation of lifting strength database, Generation of Anthropometrical database, Measurement of shoulder width, long bone length, and chest depth for tracking growth using Large Bone Caliper, Measurement of wrist knee and ankle width using Small Bone Caliper, Measurement of sagittal abdominal diameter using abdominal diameter, Measurement of maximum chest expansion from resting to full inspiration using chest depth Caliper, Measurement of finger circumference using finger circumference gauge	10	Creation of Anthropometry and Isometric Strength Data Base
3	Assessment of reaction time, Assessment of comparative physical fitness level among the subject, Foot pressure mapping and the orthostatic balance in static, dynamic and postural acquisition using Electronic Foot Sensor Plate	10	Assessment of human capabilities and limitation, Understand and interpret the principles of foot pressure analysis
4	Time and motion analyses of visually discerned activities through an innovative interactive graphical user interface with the help of Motion and Video Task Analysis Software with the following experiments Activity sampling, Event Analysis Left-hand/Right-hand Analysis, Micro-motion Analysis, Posture Analysis, RULA or OWAS, Task Analysis, Time and Motion Study, Work sampling	10	Understand, Analyze and Interpret of time and motion of workers
5	Recording and Analysis of eye gaze data using TOBII PRO eye tracking software for fatigue analysis	6	Fatigue Analysis of workers using eye gaze data
	TOTAL	42	

Text Books:

1. Work Study and Ergonomics , Lakhwinder Pal Singh (2018), Cambridge University Press

2. Productivity engineering and management: productivity measurement, evaluation, planning, and improvement in manufacturing and service organizations, Sumanth, D. J. (1984). McGraw-Hill College.
3. Niebel's methods, standards, and work design (Vol. 700), Freivalds, A. (2009). Boston, Mass.: Mcgraw-Hill higher education.

References:

1. Motion and time study: design and measurement of work, Ralph, M. B. (1980), John Wiley & Sons