

5 th Semester	RPR5D002	Work Study and Ergonomics	L-T-P 3-0-0	3 Credits
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Module-I:**(10 hours)**

Method study: purpose of work study, its objectives, procedure & applications; method study definition & basic procedure, selection of job, various recording techniques like outline process charts, flow process charts, man machine charts, two handed process charts, string diagram, flow diagram, multiple activity chart, simo, cyclo-graphs and chrono-cyclographs; critical examination, development, installation and maintenance of improved method; principles of motion economy and their application in work design; micro motion study, memo motion study and their use in methods study.

Module-II:**(10 hours)**

Work measurement: Introduction & definition, objectives and basic procedure of work measurement; application of work measurement in industries; time study: basic procedure, equipments needed, methods of measuring time, selection of jobs, breaking a job into elements; numbers of cycles to be timed; rating and methods of rating, allowances, calculation of standard time. Work sampling: Basic procedure, design of work sampling study conducting work sampling study and establishment of standard-time.

Module-III:**(10 hours)**

Job evaluation and incentive schemes: Starlightline, Taylor, Merrick and Gantt incentive plans Standard data system; elemental & non-elemental predetermined motion system, work factors system; Methods Time Measurement (MTM), MOST.

Module-IV:**(8 hours)**

Human factor engineering: Definition and history of development of human factors engineering, types & characteristics of man-machine-system, relative capabilities of human being and machines; development and use of human factor data; information input and processing: Introduction to information theory; factors effecting information reception and processing; coding and selecting of sensory inputs.

Module-V:**(4 hours)**

Display systems and anthropometric data: Display- types of visual display, visual indicators and warning signals; factorial and graphic display; general principles of auditory and tactual display, characteristics and selection.

Books:

- [1] ILO; work-study; International Labour Organization
- [2] Khan MI; Industrial Ergonomics; PHI Learning
- [3] Barnes RM; Motion and Time Study; Wiley pub
- [4] Megaw ED; Contemporary ergonomics; Taylor & Francis
- [5] Sandera M and Mc Cormick E; Human Factors in Engg and design; MGHill
- [6] Currie RM; Work study; BIM publications

Digital Learning Resources:

Course Name: Applied Ergonomy
 Course Link: <https://nptel.ac.in/courses/112/104/112104222/>
 Course Instructor: Dr. Shantanu Bhattacharya
 IIT Kanpur