

# **Gautam Buddha University, Greater Noida**

## **School of Engineering (Mechanical Engineering)**

<b>Degree</b>	<b>Course Name</b>	<b>Course Code</b>	<b>Marks:100</b>
M. Tech. Ind. Engg. & Management	Industrial Ergonomics	MEI 505	SM+MT+ET  25+25+50
<b>Semester</b>	<b>Credits</b>	<b>L-T-P</b>	<b>Exam.</b>
II	3	3-0-0	3 Hours

### **Unit - I**

**Introduction:** Factors affecting physiological performance; Physical work load and energy expenditure; Heat stress; Manual lifting; Shift work. **(07 Hours)**

### **Unit - II**

**Work Space Design:** Anthropometry; Workspace designs for standing and seated workers; Arrangement of components within a physical space; Interpersonal aspect of workplace design. **(08 Hours)**

### **Unit - III**

**Design of Equipment:** Ergonomic factors to be considered in the design of displays and control; Design for maintainability; Design of human computer interaction. **(08 Hours)**

### **Unit IV**

**Cognitive Ergonomics:** Information theory; Information processing; Signal detection theory; Human response; Human errors; Cognitive task analysis. **(08 Hours)**

## **Unit - V**

**Design of Environment:** Design of physical environment; Human thermoregulation; Measuring thermal environment; Measurement of light; Lighting design considerations; Measurement of sound; Industrial noise control; Vibration; Principles for the design of visual displays; Design of control; Work organization and work system design. **(08 Hours)**

## **Unit – VI**

**Case Studies:** A set of case studies will be used to demonstrate how ergonomics has lead to changes in work activity; Safety and product design. Case studies will include advanced computer applications; Workplace assessment and re-design; Accident analysis and industrial inspection and in manufacturing; Students will be required to apply the principles to a real life ergonomic design as applied to a product; Service or computer application. **(06 Hours)**

### **Recommended Books:**

1. Introduction to Ergonomics; R.S. Bridger; McGraw Hill.
2. A guide to Human Factors and Ergonomics; Martin Helander; 2<sup>nd</sup> Edition; CRC; Taylor & Francis Group.
3. Human Factors Engineering and Design; J. McCormik; McGraw Hill.