

22MEHO306		ERGONOMICS IN DESIGN							
PREREQUISITES		CATEGORY	L	T	P	C			
		PE	3	0	0	3			
<b>COURSE OBJECTIVES:</b>									
1.	Accurately recognize and evaluate hazards (ergonomic in nature) Accurately recognize and evaluate hazards (ergonomic in nature) which are likely to cause occupational illnesses or injuries.								
2.	To introduce students about the essentials of Static and dynamic anthropometry and Posture and job relation								
3.	Apply the knowledge, skills, and abilities obtained in through subject into an industrial based problem.								
<b>UNIT I</b>	<b>INTRODUCING ERGONOMICS AND DISCIPLINE APPROACH: ERGONOMICS/ HUMAN FACTORS</b>					<b>9</b>	<b>0</b>	<b>0</b>	<b>9</b>
Design today- Human aid to lifestyle, Journey, Fitting task to man their contractual structure, Domain, Philosophy and Objective, Mutual task comfort: two way dialogue, communication model, Ergonomics/ human Factors fundamentals, Physiology (work physiology) and stress									
<b>UNIT II</b>	<b>HUMAN PHYSICAL DIMENSION CONCERN AND POSTURE AND MOVEMENT</b>					<b>9</b>	<b>0</b>	<b>0</b>	<b>9</b>
Human body- structure and function, anthropometrics, Anthropometry: body growth and somatypes, Static and dynamic anthropometry, Stand Posture- erect, Anthropometry landmark: Sitting postures, Anthropometry: squatting and cross-legged postures, Anthropometric measuring techniques, Statistical treatment of data and percentile calculations Human body- structure and function, Posture and job relation, Posture and body supportive devices, Chair characteristics, Vertical work surface, Horizontal work surface, Movement, Work Counter.									
<b>UNIT III</b>	<b>BEHAVIOUR AND PERCEPTION AND VISUAL ISSUES, ENVIRONMENTS FACTORS</b>					<b>9</b>	<b>0</b>	<b>0</b>	<b>9</b>
Communication and cognitive issues, Psycho-social behaviour aspects, behaviour and stereotype, Information processing and perception, Cognitive aspects and mental workload, Human error and risk perception; Visual performance, Visual displays, Environmental factors influencing human performance.									
<b>UNIT IV</b>	<b>ERGONOMIC DESIGN PROCESS, PERFORMANCE SUPPORT AND DESIGN INTERVENTION</b>					<b>9</b>	<b>0</b>	<b>0</b>	<b>9</b>
Ergonomics design methodology, Ergonomics criteria/check while designing, Design process involving ergonomics check, Some checklists for task easiness. Occupational safety and stress at workplace in view to reduce the potential fatigue, errors, discomforts and unsafe acts, Workstation design, Furniture support, Vertical arm reach and design application possibility, Humanising design: Design and human compatibility, comfort and adaptability aspects.									
<b>UNIT V</b>	<b>OFFICE FURNITURE GUIDELINES FOR FIT AND FUNCTION, DESIGN ERGONOMICS IN INDIA AND UNIVERSAL DESIGN CONSIDERATIONS</b>					<b>9</b>	<b>0</b>	<b>0</b>	<b>9</b>
Office Furniture Guidelines for Fit and Function Anticipate Actions, Chairs, Desk and Work surfaces, Storage and Files, Accessories Resources for Designing Ergonomic Products. Design Ergonomics in India: scope for exploration. Universal Design Considerations Wheelchairs Crutches, Canes, and Walkers Knobs, Handles, and Controls Access Ramps and Stairs, Resources on Universal Design.									
<b>TOTAL (45L): 45 PERIODS</b>									
<b>TEXT BOOKS:</b>									
1.	Bridger, RS: Introduction to Ergonomics, 2nd Edition, Taylor & Francis, 2003.								
2.	Dul, J. and Weerdmeester, B. Ergonomics for beginners, a quick reference guide, Taylor & Francis, 1993.								
<b>REFERENCES:</b>									
1.	Green, W.S. and Jordan, P .W, Human Factors in Product Design, Taylor & rancis, 1999.								

2.	D. Chakrabarti, Indian Anthropometric Dimensions for ergonomic design practice, National Institute of Design, Ahmedabad, 1997
3.	G. Salvendy (edit), Handbook of Human Factors and ergonomics, John Wiley & Sons, Inc., 1998.

<b>COURSE OUTCOMES:</b> Upon completion of this course, the students will be able to:		<b>Bloom Taxonomy Mapped</b>
<b>CO1</b>	Learn about the basics of Human aid to lifestyle, Physiology and stress	Understand
<b>CO2</b>	Learn about the anthropometry: body growth and somatotypes, further about Vertical work surface, Horizontal work surface can also be obtained.	Understand
<b>CO3</b>	Study about the communication and cognitive issues, it promotes about environmental factors influencing human performance.	Understand
<b>CO4</b>	Learn about the Ergonomics design methodology and gives fathom notion on Occupational safety and stress at workplace	Understand
<b>CO5</b>	Study about Office furniture guidelines for fit and function and universal design considerations	Understand

<b>COURSE ARTICULATION MATRIX</b>															
<b>COs/POs</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>
<b>CO1</b>	1	0	0	0	0	3	2	2	0	0	0	2	1	2	1
<b>CO2</b>	1	0	0	0	0	3	2	2	0	0	0	2	1	2	1
<b>CO3</b>	1	0	0	0	0	3	2	2	0	0	0	2	1	2	1
<b>CO4</b>	1	0	0	0	0	3	2	2	0	0	0	2	1	2	1
<b>CO5</b>	1	0	0	0	0	3	2	2	0	0	0	2	1	2	1
<b>Avg</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>
3/2/1 – indicates strength of correlation (3 – high, 2- medium, 1- low)															