

COURSE NUMBER: IE 4511 (cross-listed with 5511), 4 credits	COURSE TITLE: Human Factors
TERMS OFFERED: Fall	PREREQUISITES: Upper Division CSE
TEXTBOOKS/REQUIRED MATERIAL: Niebel, B.W. and Freivalds, A. <i>Methods, Standards, and Work Design</i> (11 th Ed.) Boston, MA, McGraw-Hill, 2003.	PREPARED BY: Professor Caroline C. Hayes DATE OF PREPARATION: May 22, 2007
COURSE LEADER(S): Professor Caroline C. Hayes	CLASS/LABORATORY SCHEDULE: Two 110 minute sessions per week CONTRIBUTION OF COURSE TO MEETING PROFESSIONAL OBJECTIVES: 100% Engineering topics
CATALOG DESCRIPTION: Human factors engineering (ergonomics), methods engineering, and work measurement. Human-machine interface: displays, controls, instrument layout, and supervisory control. Anthropometry, work physiology and biomechanics. Work environmental factors: noise, illumination, toxicology. Methods engineering, including operations analysis, motion study, and time standards.	COURSE TOPICS: <ol style="list-style-type: none"> 1. Problem-solving tools 2. Operation analysis 3. Manual work design 4. Workplace, equipment, and tool design 5. Work environment design 6. Proposed method implementation 7. Time study 8. Performance rating 9. Allowances 10. Standard data 11. Time and motion studies 12. Work sampling

COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. To teach human factors engineering (ergonomics). 2. To teach methods engineering. 3. To teach work measurement. 4. To emphasize those aspects of the subject area that are particularly relevant to engineers. 5. Make students appreciate the importance and relevance of the various topics to real engineering problems. 6. Provide students with the necessary tools to solve a wide variety of human factors. 7. Cover various design guidelines and emphasize real constraints and trade-offs.
COURSE OUTCOMES	<p style="text-align: center;">(letters shown in brackets are linked to ABET outcomes a-k)</p> <ol style="list-style-type: none"> 1. Obtain the necessary knowledge and background in human factors engineering for proper design of workstations, machines and tools, and work environments [a, b, c, e, i, k] 2. Learn to use basic techniques and principles of methods engineering to improve work efficiency [a, c, d, g, k] 3. Develop the necessary knowledge base to perform work measurement using different methods [a, b, e, i, k]. 4. Gain understanding of the scientific basis for important principles and guidelines of human factors and work design [a,b].
ASSESSMENT TOOLS	<ol style="list-style-type: none"> 1. Exams, final exam, homework exercises, projects.