IH&S 460 - Ergonomics
Fall 2019

Description: Study of human-machine system with an emphasis on improving the human performance. The course provides the students with the technical foundation required to understand and evaluate the fundamental components of the human-machine system.

Course Objectives:

1. To understand various modes of information input and humans information processing.
2. To be able to quantify the human output, abilities, and limitations within human-machine system.
3. To learn the techniques used to quantitatively and qualitatively evaluate tools, machines, systems, tasks, jobs, and environments of human-machine system.
4. To be able to identify and modify equipment or task characteristics that enhance human performance, safety, and well-being within the human-machine system.

Instructor: Dr. Ashish D. Nimbarte, Associate Professor, IMSE Department
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Email: Ashish.Nimbarte@mail.wvu.edu
Office Hours: 3:30 pm to 4:30 pm TR, or by appointment
Lectures: 2:00 pm to 3:15 pm TR, MRB-E 205
Text Used: Sanders and McCormick (1993) Human Factors in Engineering and Design 7th Ed. ISBN: 007054901X
References: Current technical articles and library sources.
Prerequisites: IENG 213 or a first course in Statistics addressing distributions and hypothesis testing.

Final grade is weighted as follows:

Quizzes & Homework	15%	90-100%	= A
First Test	17%	80-89%	= B
Second Test	16%	70-79%	= C
Third Test	16%	60-69%	= D
Final Exam	26%	<59%	= F
Class Project*	10%		
	100%		

No late homework are accepted. No make-up exams are given.

Statement on Attendance: Attendance is mandatory. Students who are absent from class for any reason are expected to take full responsibility for their own academic work and progress and are required to complete missed work or equivalent work, as deemed appropriate by the instructor. Regarding the excused absences the WVU attendance policy (http://catalog.wvu.edu/undergraduate/enrollmentandregistration/#Attendance) will be followed:

Academic Integrity Statement: The integrity of the classes offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. Therefore, instructors will enforce rigorous standards of academic integrity in all aspects and assignments of their courses. For the detailed policy of West Virginia University regarding the definitions of acts considered to fall under academic dishonesty and possible ensuing sanctions, please see the West Virginia University Academic Standards Policy (http://catalog.wvu.edu/undergraduate/coursecreditstermsclassification). Furthermore, a new policy on Student Academic Integrity can be found at https://provost.wvu.edu/governance/academic-standards-resources/academic-integrity-policy Should you have any questions about possibly improper research citations or references, or any other activity that may be interpreted as an attempt at academic dishonesty, please see your instructor before the assignment is due to discuss the matter.

Inclusivity Statement: The West Virginia University community is committed to creating and fostering a positive learning and working environment based on open communication, mutual respect, and inclusion. If you are a person with a disability and anticipate needing any type of accommodation in order to participate in your classes, please advise your instructors and make appropriate arrangements with the Office of Accessibility Services. (https://accessibilityservices.wvu.edu/). More information is available at the Division of Diversity, Equity, and Inclusion (https://diversity.wvu.edu/) as well.

To review the various WVU Academic Policies please visit https://tlcommons.wvu.edu/syllabus-policies-and-statements#10

Course Topics:

Week	Date	Lecture Topic	Textbook Chapters	Exam	Final
1	22-Aug-19	Introduction to Human Factors Engineering	1	Introduction	
2	27-Aug-19	Information Input and Processing Information Processing Theory Signal Detection Theory	3	Human Information Processing	
	29-Aug-19				
3	3-Sep-19				
	5-Sep-19				
4	10-Sep-19	Static and Dynamic Visual Display	4,5		
	12-Sep-19				
5	17-Sep-19	Auditory Display	6		
	19-Sep-19	Tactual and Olfactory Displays			
6	24-Sep-19	Musculoskeletal System and Physical Work	8,9	Human Output and Control	
	26-Sep-19				
7	1-Oct-19	**1st Exam**			
	3-Oct-19	Occupational Biomechanics and Manual Materials Handling	8,9		
8	8-Oct-19				
9	15-Oct-19				
	17-Oct-19				
10	22-Oct-19	Applied Anthropometry	13	Workplace Design	
	24-Oct-19	**(Due date for making class project selection)**			
11	29-Oct-19	**2nd Exam**			
	31-Oct-19	Applied Anthropometry	13		
12	5-Nov-19	Illumination	16	Workplace Environmental Conditions	
	7-Nov-19	Climate	17		
13	12-Nov-19	Noise	18		
	14-Nov-19	Vibration	19		
14	19-Nov-19	Evaluation of Physical Space	10		
	21-Nov-19	**3rd Exam**			
15	26-Nov-19	Fall Recess			
	28-Nov-19				
16	3-Dec-19	NIOSH Lifting Equation Job Severity Index	8,9		
	5-Dec-19				
17	10-Dec-19	Human Factors Research Methodologies	2,21,22		
	12-Dec-19	Final Exam Review (**Due date for final project report submission**)			
18	20-Dec-19	**Final Exam – 8 am to 10 am**			

***Class Project: The following three options are available for class project:**

1) Critical review of a research article: class presentation and report submission
2) Review of existing research papers (at least 15) on a contemporary ergonomics problem and report submission
3) Lab project that involves data collection, processing and report preparation

List of Journals for options 1 and 2:

1) Ergonomics (publisher: Taylor & Francis); 2) Applied Ergonomics (publisher: Elsevier); 3) International Journal of Industrial Ergonomics (publisher: Elsevier); 4) IISE Transactions on Occupational Ergonomics and Human Factors (publisher: Taylor & Francis) - **Class presentations will be conducted in the last week of classes**