

# IENG 360 - Human Factors Engineering

## Spring 2015

**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:** Ashish D. Nimbarte, Ph.D., Assistant Professor, IMSE Department

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**Office Hours:** 3:30 pm to 4:30 pm TR, or by appointment

**Lectures:** 2:00 pm to 3:15 pm TR, 205 Mineral Resources Building

**Text Used:** Sanders and McCormick (1993) Human Factors in Engineering and Design.  
7<sup>th</sup> 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	20%	80-89%	= B
Second Test	20%	70-79%	= C
Third Test	20%	60-69%	= D
Final Exam	25%	<59%	= F
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No late homework are accepted. No make-up exams are given.

**Statement on Attendance:** Consistent with WVU guidelines, students absent from regularly scheduled examinations because of authorized University activities will have the opportunity to take them at an alternate time.

**Academic Integrity:** 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, I will enforce rigorous standards of academic integrity in all aspects and assignments of this course. 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 Student Conduct Code at [http://studentlife.wvu.edu/office\\_of\\_student\\_conduct/student\\_conduct\\_code](http://studentlife.wvu.edu/office_of_student_conduct/student_conduct_code). 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 me 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.

**Accommodation:** If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangements with the Office of Accessibility Services (293-6700). For more information on West Virginia University's Diversity, Equity, and Inclusion initiatives, please see <http://diversity.wvu.edu>

**Course Topics:**

Week	Date	Lecture Topic	Textbook Chapters	HW	Midterm	Final
1	13-Jan-15	Introduction to Human Factors Engineering	1	1	Introduction	
	15-Jan-15					
2	20-Jan-15	Information Input and Processing, Information Processing Theory, Signal Detection Theory	3	1	Human Information Processing	
	22-Jan-15					
3	27-Jan-15	Static and Dynamic Visual Display	4,5	2	Human Information Processing	
	29-Jan-15					
4	3-Feb-15	Auditory Display	6	2	Human Information Processing	
	5-Feb-15	Tactual and Olfactory Displays	6			
5	10-Feb-15	Musculoskeletal System and Physical Work	8	3	Human Output and Control	
	12-Feb-15					Physical Work
6	17-Feb-15	1st Test		3	Human Output and Control	
	19-Feb-15					
7	24-Feb-15	Occupational Biomechanics	8,9	4	Human Output and Control	
	26-Feb-15					
8	3-Mar-15	Manual Materials Handling, NIOSH Lifting Equation, Job Severity Index, Human Strength	8,9	4	Human Output and Control	
	5-Mar-15					
9	10-Mar-15			5	Workplace Design	
	12-Mar-15					
10	17-Mar-15	Applied Anthropometry	13	5	Workplace Design	
	19-Mar-15	2nd Test				
11	24-Mar-15	Spring break		5	Workplace Design	
	26-Mar-15					
12	31-Mar-15	Applied Anthropometry	13	6	Workplace Environmental Conditions	
	2-Apr-15	Illumination	16			
13	7-Apr-15	Climate	17	6	Workplace Environmental Conditions	
	9-Apr-15	Noise	18			
14	14-Apr-15	Vibration	19	6	Workplace Environmental Conditions	
	16-Apr-15	Compatibility	10			
15	21-Apr-15	3rd Test		6	Workplace Environmental Conditions	
	23-Apr-15					
16	28-Apr-15	Human Factors Research Methodologies	2,21,22	6	Workplace Environmental Conditions	
	30-Apr-15	Human Factors in Automobile & System Design				
	7-May-15	Final Exam, 11:00 am to 1:00 pm				