

# IENG 360 - Human Factors Engineering

## Spring 2020

**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

**Office:** 349 Engineering Science Building  
Phone: 304-293-9473

**Email:** [Ashish.Nimbarte@mail.wvu.edu](mailto:Ashish.Nimbarte@mail.wvu.edu)

**Office Hours:** 1:00 pm to 2:00 pm MW, or by appointment

**Lectures:** 3:00 pm to 4:15 pm MW, EVC-E 414

**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
	<u>100%</u>		

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>). 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/) (<https://diversity.wvu.edu/>) as well.

**The Statler College Smart Device Policy:** The use of programmable calculators or smart devices (including smart-phones, smart watches, tablets, cameras, wearable devices, etc.) on exams and quizzes prohibited

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	Midterm	Final	
1	13-Jan-20	Introduction to Human Factors Engineering	1	Introduction		
	15-Jan-20					
2	22-Jan-20	Information Input and Processing, Information Processing Theory, Signal Detection Theory	3	Human Information Processing		
3	27-Jan-20					
	29-Jan-20					
4	3-Feb-20					
	5-Feb-20	Static and Dynamic Visual Display	4,5			
5	10-Feb-20	Auditory Display	6			
	12-Feb-20	Tactual and Olfactory Displays	6			
6	17-Feb-20	Musculoskeletal System and Physical Work	8	Human Output and Control		
	19-Feb-20	<b>1st Test</b>				
7	24-Feb-20	Physical Work, Biomechanics and Manual Materials Handling	8,9	Human Output and Control		
	26-Feb-20					
8	2-Mar-20					
	4-Mar-20					
9	9-Mar-20					
	11-Mar-20					
10	16-Mar-20	Spring break				
	18-Mar-20					
11	23-Mar-20	Applied Anthropometry	13	Workplace Design		
	25-Mar-20	<b>2nd Test</b>				
12	30-Mar-20	Applied Anthropometry	13	Workplace Environmental Conditions		
	1-Apr-20					
13	6-Apr-20	Illumination	16	Workplace Environmental Conditions		
	8-Apr-20	Climate	17			
14	13-Apr-20	Noise	18	Workplace Environmental Conditions		
	15-Apr-20	Vibration	19			
15	20-Apr-20	<b>3rd Test</b>				
	22-Apr-20	Workplace evaluation tools (NIOSH, JSI)	8,9			
27-Apr-20						
16	29-Apr-20	Final Exam Review				
	6-May-20	Final Exam, 11:00 am to 1:00 pm				