

# IENG 493B/593B – Human Machine Interaction

## Fall 2018

**Description:** The course provides the students with the technical foundation required to understand, design and evaluate the fundamental components of the human-machine interaction.

### Course Objectives:

1. Students will learn the key functions of human cognition and physical systems that are involved in the interactions with the machines
2. Students will learn human machine interaction design laws and various forms of human machine interactions
3. Students will learn the key concepts involved in the design of a new product with an emphasis on the user

**Instructor:** Ashish D. Nimbarte, Ph.D., Associate Professor, IMSE Department  
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**Office Hours:** 12:15 pm to 1:15 pm TR, or by appointment

**Lectures:** 11:00 am to 12:15 pm TR, ESB-E 251

### Text Used:

- Dix, Finlay, Abowd, & Beale. "Human Computer Interaction - 3<sup>rd</sup> Edition". Pearson
- Rogers, Sharp, & Preece. "Interaction Design: beyond human-computer interaction - 3<sup>rd</sup> Edition". Wiley.
- Konz, Stephan, & Johnson Steven. "Work Design: Occupational Ergonomics - 7<sup>th</sup> Edition". Holcomb Hathaway
- Current Peer-reviewed Journal Articles and other online and library sources.

**Prerequisites:** Instructor consent.

### Final grade is weighted as follows:

Quizzes & Assignments	45%	90-100%	<b>A</b>
Mid-term Exam	25%	80-89%	<b>B</b>
Final Exam	25%	70-79%	<b>C</b>
Class participation	5%	60-69%	<b>D</b>
	<b>100%</b>	<59%	<b>F</b>

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

### Course Topics:

- Human Cognition System
- Human Visual, Audio, Tactile and Olfactory systems
- Human Machine Interaction Design Laws
  - o Fitts's Law
  - o Hick-Hyman Law
  - o Power Law of Practice / Learning Models
  - o Law of Conservation Complexity
  - o Poka Yoka Principle and Various Other Interaction Design Laws
- Human Machine Interfaces
- New Product Development
- Musculoskeletal Disorders
- Design of Hand Tools
- Compatibility and Usability

**Mid-term exam:** Thursday, September 27, 2018

**Final exam:** Thursday, December 13, 8 a.m. – 10 a.m.

**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 –available at the following web link – will be followed: <http://catalog.wvu.edu/undergraduate/enrollmentandregistration/#Attendance>

**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/coursecredittermsclassification) (<http://catalog.wvu.edu/undergraduate/coursecredittermsclassification>). 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/). (<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.

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