



Human Factors in Product Design

3 Credits

IE 323

Spring 2022

Instructor: Harry S. Whiting II, PE **Email:** hwhiting@navajotech.edu
Office Information: Tech 323 **Office Phone:** (505) 387-7421
Home or Cell: N/A

Class Location: Tech Building 325

Meeting Times: Monday and Wednesday 8:00 – 9:20 AM

Required Materials:

Text: Introduction to Human Factors Engineering, 2nd ed. By C. Wickens, J. Lee, Y. Liu & S. Gordon-Becker ISBN: 0131837362 ISBN-13:978131837362 (Price TBD)

Tools: Jump drive & access to Microsoft Office Suite.

Lab Fee: None

Course Description: Topics covered include: Physical and psychological factors which affect human performance in system design, performance as applied to safety, reliability, productivity, stress reduction and human/machine interfaces.

Course Objectives:

- 1) Students will understand how to identify human-work problems in occupational and living environments.
- 2) Students will be able to understand human mental capacities for work.
- 3) Students will understand how to measure physical and mental demands on human beings for specific tasks.

- 4) Students will understand the scientific concepts in designing environments, anthropometry, equipment and work methods for enhancing performance and minimizing stresses on the worker.
- 5) Student will understand information processing and mental input – mainly visual and auditory.
- 6) Students will understand how to increase usability of industrial and consumer products.

COURSE OUTCOMES	COURSE MEASUREMENTS
Student will be able to analyze human factors problems and suggest solutions.	Assessment will be by problems presented in homework, quizzes & tests.
Students will examine HF approaches to solving an engineering problem in order to choose the more effective approach.	
Students will be able to identify constraints on design problems and establish criteria for acceptability and desirability of solutions.	
Students will be able identify the environmental and social issues involved in an engineering solution and incorporates that sensitivity into the design process.	
Students will be able select appropriate techniques and tools for a specific engineering task and compares results from alternative tools or techniques.	

Grading Plan:

Homework	20%
Attendance & participation	10%
Weekly quizzes	20%
Midterm	20%
Final	20%
Project	10%
Total	100%
Portfolio (Extra Credit)	+%

(A) 90-100; (B) 80-89; (C) 70-79; (D) 60-69; (F) 0-59

Grading Notes: Homework will be assigned weekly and graded on a scale of 1-10. The top ten scoring homework assignments as turned in by the student will be used in calculating final grade. Homework is due one week after assignment for full credit, may still be turned in the next week for 75% credit and no credit

thereafter. Homework will always be computer print outs except if a handout is given as an assignment. Weekly quizzes will be given at the beginning of the Wednesday class of the week and graded on a scale of 1-10. **Quizzes will be closed book.** The top ten quiz grades will be used in calculating final grades. Students who miss quizzes or tests will not be allowed a makeup (unless a legitimate written excuse is provided) and Midterm and Final grades will be curved according to raising the highest objective grade in class to a '100' with all other student grades raised by the same number of points **only if there are six or more students in the class.** Attendance & participation will be graded based on the student's arrival on time and further predicated on a student's questions (two required per class period). Projects must be completed to pass the class; those not finishing and presenting class projects will be given an incomplete.

Course Policies: Please turn off Cell Phones during lectures. Please, be courteous to others around you and treat each other with professionalism. Feel free to work together to help others with their questions on homework. Quizzes and tests should be done without help or input from others.

Attendance Policy: You are expected to attend every class session and participate. Your job or employment is as a student. After you are absent, it is your responsibility to complete missed assignments. Attendance will account for 10% of the final grade. Students will be subject to being dropped if they exceed three (3) unexcused absences.

Academic Integrity: Integrity (honesty) is expected of every student in all academic work and every engineer working professionally. The guiding principle of academic integrity is that a student's submitted work must be the student's own. Students who engage in academic dishonesty diminish their education and bring discredit to the college community. Avoid situations likely to compromise academic integrity such as: cheating, facilitating academic dishonesty, and plagiarism. Don't modify academic work to obtain additional credit in the same class or other classes unless approved in advance by the instructor. Failure to observe rules of academic integrity established by the instructor may result in expulsion from class.

Diné Philosophy of Learning: From the culture of the proud people of this land, derived from the wisdom of generations, the Dine" philosophy of learning is expressed through these words: nitsahakees-thinking, your increased skills, nahata-planning to meet these goals, iina-implement the work required to learn, practice your new skills, sihasin-evaluate your skills, use them. Each exercise includes these processes of THINKING, PLANNING, IMPLEMENTING, and REFLECTION.

Students with Disabilities: The Navajo Technical College and the Industrial Engineering Program are committed to serving all enrolled students in a non-discriminatory and accommodating manner. Any student who feels he/she may need an

accommodation based on the impact of disability, or needs special accommodations should inform the instructor privately of such so that accommodations arrangement can be made. Students who need an accommodation should also contact the Vocational Rehabilitation Counselor, Virginia Edgewater (505) 387-7396.