

# ISE 333 – Work Design and Human Factors

Fall 2003

**Course:** ISE 333 - Work Design and Human Factors - 5 credit hours      Call number: 03859

Work Design and Human Factors Lab Session – 0 credit hours      03860 (Thurs. am)

03861 (Thurs. pm)

**Catalog description:** Design of work systems and measurement of work. Topics include job methods, operation analysis, charting techniques and schematic models, stop-watch time study, work sampling, predetermined time systems, standard data, incentive wage systems, and learning curves

**Sessions:** Monday and Wednesday 2:10-4:00, 166 Stocker

Lab – Thursday 10:10-12:00 or 2:10-4:00, 285 Stocker

**Instructor:** Dale Masel [masel@ohio.edu](mailto:masel@ohio.edu)

273 Stocker Center, 593-1541

<http://www.ent.ohiou.edu/~masel/ise333>

**Office hours:** MW 9:00–11:00; T 1:00–2:00

**Textbook:** Work Design: Industrial Ergonomics, 5<sup>th</sup> Edition, Konz & Johnson (2000)

## **Course objectives:**

This course will cover many of the basic skills of the field of industrial engineering. Your future courses will enhance and extend many of the skills and techniques covered in this course, so it is important to understand the material in this course as the foundation of your future studies.

In addition, there will also be an emphasis on developing your writing skills, with laboratory reports and other writing exercises. In your remaining engineering classes and in your career, the ability to effectively and persuasively communicate your ideas will be important to your success and learning to do this will be stressed in this course.

## **Course prerequisite skills:**

- Calculate a confidence interval from the result of a binomial experiment

## **Course outcomes:**

- Design an efficient sequence of operations
- Develop a left-hand/right-hand chart for given manual operations
- Develop and interpret a process chart for given operations
- Balance operations to form efficient workstations
- Design a manual workstation
- Design and perform a work sampling study
- Design and perform a time study
- Determine appropriate work allowances
- Develop time standards from the results of a time study
- Apply a predetermined time system to determine a standard time
- Calculate the learning curve for a task
- Identify ergonomic concerns in designing a manual work area
- Identify means for insuring worker safety
- Select the appropriate manual tools for a particular application
- Identify concerns in the design of a display or control
- Work and contribute as part of a team
- Express ideas clearly in writing

**Computer usage:**

Microsoft Excel will be used for data analysis and an introduction to it will be given for students who are not familiar with it. Laboratory reports must be typed using Microsoft Word or another appropriate word processing package.

**Grading policy:**

Assignments:

- Homework assignments (1–2 per week) and pop quizzes in class ..... 30%
  - Weekly laboratory reports..... 20%
  - One midterm (closed-book) in class on Wednesday, October 8..... 20%
  - The final exam (closed-book) will be Monday, November 24 at 12:20 p.m..... 30%
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- 100%

<u>Grading Scale:</u>	A	90-100%	D	60-69.5%
	B	80-89.5%	F	0-59.5%
	C	70-79.5%		

**Attendance policy:**

Attendance will not be taken for lecture classes, but students are expected to be present for all class periods. Attendance at the assigned laboratory session is mandatory and make-up lab sessions will not be given. If a student misses a laboratory session, he/she will not receive credit for that week's laboratory report.

**Academic misconduct:**

Cheating will not be tolerated. If you copy from another person, plagiarize, turn in someone else's work as your own, or otherwise fail to maintain a high standard of academic honesty, you will receive a 0 on the assignment and the case will immediately be referred to the university judiciary office.

**Tentative schedule:**

Week	Date	Topic(s)	Chapter(s)
1	Sept. 8	Intro to Work Design, SEARCH	1-5
2	Sept. 15	Value Engineering, Operations Analysis	6-7
3	Sept. 22	Work Sampling, Time Studies	8-9, 27-28
4	Sept. 29	Learning, Predetermined Time Systems, Standards	29-32
5	Oct. 6	Change Implementation, <b>TEST</b>	33-35
6	Oct. 13	Anthropometry, Intro to Ergonomics	10-14
7	Oct. 20	Work Station Organization and Design	15-16
8	Oct. 27	Cumulative Trauma, Material Handling, Hand Tools	17-19
9	Nov. 3	Controls, Displays, Environment	22-26
10	Nov. 10	Lean Manufacturing, Six Sigma	N/A
11	Nov. 17	TBA	