**Hacettepe University**

**Department of Industrial Engineering**

**EMÜ242 – WORK ANALYSIS AND DESIGN**

Spring 2019-2020

**INSTRUCTOR:** Reza Vatankhah

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 Office Hours: Thursday 14:00-17:00

**Course Objectives:** Developing students' skills to implement engineering methods to measure, analyze, and design work to increase productivity in man-machine systems.

**COURSE CONTENTS:** Productivity, work study, methods study, work measurements, work sampling, time study, normal and standard times, work flow diagrams, working environment, work management, assembly line balancing, material handling.

**LEARNING OUTCOMES:** Upon completion of this course, the students should be able to

* Perform work analysis and design
* Perform work study, method study, and time study in a workplace
* Define and implement basic principles of work systems and how they work; methods engineering; time study and work measurement; process improvement and work management; ergonomics and human factors in the workplace
* Explain work systems and how work is analyzed and designed
* Explain and analyze “systems” by which work is accomplished, such as man-machine systems, manufacturing cells, assembly lines, projects, and office work pools
* Explain aspects of work systems, operations analysis, and work measurement using mathematical equations and quantitative examples

**Textbook:** Groover M. P. (2007) Work Systems and the Methods, Measurement, and Management of Work, Pearson Education.

**OR**

 Groover M. P. (2013) Work Systems and the Methods, Measurement, and Management of Work, Pearson Education.

**SUPPLEMENTARY TEXTBOOK:** Barnes, R. M. (1980) Motion and Time Study, Design and Measurement of Work, 7th Ed., John Wiley & Sons.

**COURSE WEBPAGE:** <http://yunus.hacettepe.edu.tr/~uhus/courses/emu242>

 **Username:** student

 **Password:**

**EVALUATION:** An in class midterm exam and a final exam will be given. There will be several assignments and a project. The following are the tentative weights for the exams, assignments and the project(s):

Midterm 30%

Assignments/ Project 30%

Final 40%

**COURSE OUTLINE:**(Tentative-adjustments might be necessary based on our pace)

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| **WEEK #** | **TOPICS** | **READINGS** |
| Week #18.2 | Introduction to Work Systems | Ch. 1 (G) |
| Week #215.2 | Work Systems  | Ch. 2-3 (G) |
| Week #322.2 | Methods Engineering and Operations Analysis | Ch. 8-10 (G) |
| Week #429.2 | Methods Engineering and Operations Analysis | Ch. 8-10 (G) |
| Week #57.3 | Methods Engineering and Operations Analysis | Ch. 8-10 (G) |
| Week #614.3 | Methods Engineering and Operations Analysis | Ch. 8-10 (G) |
| Week #721.3 | Time Study and Work Measurement | Ch. 12-16 (G) |
| Week #828.3 | Time Study and Work Measurement | Ch. 12-16 (G) |
| Week #94.4 | Midterm Exam |  |
| Week #1011.4 | Time Study and Work Measurement | Ch. 12-16 (G) |
| Week #1118.4 | Time Study and Work Measurement | Ch. 12-16 (G) |
| Week #1225.4 | Assembly Line Balancing | Ch. 4 (G) |
| Week #132.5 | Assembly Line Balancing  | Ch. 4 (G) |
| Week #149.5 | Material Handling | Ch. 5 (G) |