



**EASTERN MEDITERRANEAN UNIVERSITY**  
**DEPARTMENT OF INDUSTRIAL ENGINEERING**  
**MANE/IENG490 Introduction to Manufacturing & Service Systems Design**  
**COURSE OUTLINE**



|                         |  |                                 |                |
|-------------------------|--|---------------------------------|----------------|
| <b>COURSE CODE</b>      | IENG490/MANE490  | <b>COURSE LEVEL</b>             | Fourth Year    |
| <b>COURSE TITLE</b>     | Introduction to Manufacturing and Service Systems Design | <b>COURSE TYPE</b>              | Area Core      |
| <b>CREDIT VALUE</b>     | (1, 0, 1) 1  | <b>ECTS Credit Value</b>        | 1              |
| <b>PRE-REQUISITE(S)</b> | No   | <b>CO-REQUISITE(S)</b>          |                |
| <b>PREPARED BY</b>      | Dr. Orhan KORHAN, Dr. Hüseyin GÜDEN                      | <b>SEMESTER / ACADEMIC YEAR</b> | Spring 2021-22 |

|                        | <b>Name(s)</b>  | <b>E-mail</b>  | <b>Office</b> | <b>Telephone</b>                     |
|------------------------|---|--|---------------|--------------------------------------|
| <b>LECTURER(S)</b>     | Dr. Orhan KORHAN, Dr. Hüseyin GÜDEN   | <a href="mailto:orhan.korhan@emu.edu.tr">orhan.korhan@emu.edu.tr</a><br><a href="mailto:huseyin.guden@emu.edu.tr">huseyin.guden@emu.edu.tr</a> | B203,<br>B206 | +90 392 630 1052<br>+90 392 630 1097 |
| <b>ASSISTANT(S)</b>    | Ehsan S.  |  |               |                                      |
| <b>COURSE SCHEDULE</b> | Monday 15:30-16:20; Tutorial and lab: Monday 16:30-18:20  |  |               |                                      |
| <b>COURSE WEB LINK</b> | <a href="https://staff.emu.edu.tr/huseyinguden/en/teaching/ieng490-mane490/course-outline">https://staff.emu.edu.tr/huseyinguden/en/teaching/ieng490-mane490/course-outline</a> |  |               |                                      |

### COURSE DESCRIPTION

The course aims to prepare the senior year students for their Manufacturing and Service Systems Design Project course (IENG492). The students are first introduced to the type of the manufacturing or service system that they are going to design as the requirement of IENG492 during the next academic semester. Then they are asked to conduct a market survey, submit information on the types of products/services they are going to produce, amount of sales, prices, competing producers, processes required to producing and distributing them, and relevant standards/laws/rules and regulations available in the place where the system will be established. Additionally, students are required to design the products/services, make forecasting for their sales, and prepare a feasibility study of the system.

### COURSE OBJECTIVES

1. Designing the structure of a company fitted to the activity of the company in an economic way (Contributing Student Outcomes 2, 4, 7)
2. Analyzing a market (size, competitors, product types, etc.) and determining market share (Contributing Student Outcomes 1, 2, 6, 7)
3. Describing and selecting products (Contributing Student Outcomes 2, 7)
4. Understanding, describing and selecting technology (Contributing Student Outcomes 2, 7)
5. Capacity planning (Contributing Student Outcomes 1, 2, 6, 7)
6. Selecting production processes to a finished product (Contributing Student Outcomes 2, 4, 7)
7. Selecting machinery and equipment in an economic way (Contributing Student Outcomes 1, 2, 4, 6, 7)
8. Designing a material handling system (Contributing Student Outcomes 2, 4, 7)
9. Searching standards, rules, regulations related with a considered production system (Contributing Student Outcomes 2, 7)
10. Using several software programs (Contributing Student Outcomes 1, 2, 4)
11. Preparing a Term Project (Working effectively in multidisciplinary teams, making an independent research, applying related techniques in real life environment, and writing and presenting a technical report on the results) (Contributing Student Outcomes 2, 3, 4, 5, 7)

### COURSE LEARNING OUTCOMES

On successful completion of this course, students are expected to develop knowledge and understanding of:

1. Applying fundamental concepts, techniques and methodologies of the discipline to design a complex industrial or service system
2. The relationships between various problems of different fields of IE/MANE
3. Developing the ability to think critically
4. Importance of conducting an independent research and integration of the findings through a proper project team work by demonstrating involvement in and support for team activities
5. Importance of effective communication with team members, faculty and professionals in the field
6. The importance of standards in engineering design

On successful completion of this course, students are expected to develop their skills in:

1. The synthesis of the techniques and methodologies of IE/MANE
2. Working in a project team with faculty advising
3. Extracting relevant information from all available sources (including all forms of information technology, library searching, professionals etc.) related to the project
4. Using engineering standards in design
5. Performing feasibility studies and financial analysis of a real world project
6. Using IE software for decision making
7. Generating and assessment of alternative plans
8. Effective communication of team members to accomplish project activities
9. The ability to design, deliver and defend a group presentation of completed project
10. Submitting periodic complete, well-organized quality project reports

On successful completion of this course, students are expected to develop their appreciation of and respect for values and attitudes regarding the issues of:

1. Understanding of professional behaviors, engineering and professional ethics
2. Sharing the responsibilities and recognition of the need for and an ability to engage in life-long learning
3. Role of IE practices in solving real world problems
4. Importance of adhering to work schedules in real world

### TEXTBOOK

This course has no special textbook. However the book below discusses all chapters of industrial/management engineering important in this course.

Wayne C. Turner, Joe H. Mize, Kenneth E. Case, John W. Nazemetz, Introduction to Industrial and Systems Engineering, Third edition, Prentice Hall, ISBN 0-13-481789-3.

**Lecture Notes:** Students are expected to make their own notes.

### EXTENDED READING LIST

Note that aside from these books, EMU Library has quite a good collection of books on the intermediate and advanced levels in the related fields of industrial engineering discipline.

### GRADING CRITERIA

Although the student's overall grade will be based on the general assessment of the course coordinators, the following percentages may give an idea about the relative importance of various assessment tools. The course coordinators reserve the right to modify these percentages in case they deem it necessary.

| <i>Assessment Item</i>      | <i>Weight (%)</i> |
|-----------------------------|-------------------|
| Lab – software applications | 20                |
| Progress Report             | 20                |
| Final Report                | 40                |
| Presentation                | 20                |

Semester letter grades will be announced in EMU web site by the Registrar's Office after the last day for the submission of letter grades to the Registrar. Students should not insist on asking their letter grades to the course coordinator before this announcement.

### RELATIONSHIP WITH OTHER COURSES

It is a synthesis course of all the previously taken departmental courses and also a preparation for the graduation project course (IENG/MANE492 Manufacturing and Service Systems Design).

### LEARNING / TEACHING METHOD

Teaching will be based on enabling the students to understand the concepts and procedures in each topic section and to be able to apply them. To do this the course will be organized into two modules: Lectures and Tutorials/Laboratory sessions.

**Lectures:** There are discussions instead of lectures as the course isn't intended to discuss new materials.

**Tutorials:** There are no tutorials.

**Laboratory Work:** Throughout the semester, there will be several laboratory sessions, which will be conducted by the assistants, to do various computer exercises that require the use of Word, Excel, together with general IE/OR Software available in the laboratory. Laboratory sessions will always be held in the Department's PC Labs and their dates announced in advance. If you have any problem in these sessions please try to resolve your problem with the assistants first.

**Office Hours:** The students' timetables will be a base for determining appropriate time slots with zero clash (or minimum number of clashes) as much as possible. If students have difficulty in understanding any material after they have tried their best, they should consult their assistants and instructor during their office hours only. However, if you wish to meet the instructor outside of their office hours, please call him by phone or send an e-mail first to make an appointment.

**NG (Nil-grade):** **Conditions that lead to NG (Nil-grade):**

1. Not submitting the **Term Project**.
2. Not attending the **Project Presentation**.
3. **Having an attendance to discussion meetings less than 50%**.
4. **Having an attendance to lab sessions less than 50%**.
5. **THERE IS NO RESIT EXAM FOR THIS COURSE.**

**Objections:** Any form of document concerning work that is to be used by the instructor as the basis of grading will be shown to the student upon request, **within a week following the announcement of the grade.** The objection to any grade must be made to the assistants within that period. If, after an exam has been graded, you think an error was made in grading or you have questions about the grading of the material, please examine the exam solutions first, and then write your questions or comments on a separate sheet of paper and turn this paper to the assistants.

| <b>Activity</b>                      | <b>Date</b> |
|--------------------------------------|-------------|
| Progress Report Submission Deadline: | TBA         |
| Final Report Submission Deadline     | TBA         |

**CONTRIBUTION OF THE COURSE TO MEETING THE REQUIREMENTS OF CRITERION 5**

|                                |        |
|--------------------------------|--------|
| Mathematics and Basic Sciences | : 25 % |
| Engineering Science            | : 25 % |
| Engineering Design             | : 50 % |
| General Education              | : 0 %  |

**RELATIONSHIP OF COURSE TO STUDENT OUTCOMES**

| <b>Student Outcomes</b>  | <b>Level of Contribution</b> |                          |                                     |
|--|------------------------------|--------------------------|-------------------------------------|
|  | <b>No</b>                    | <b>Moderate</b>          | <b>High</b>                         |
| (1) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics  | <input type="checkbox"/>     | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| (2) an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors                   | <input type="checkbox"/>     | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| (3) an ability to communicate effectively with a range of audiences  | <input type="checkbox"/>     | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| (4) an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts | <input type="checkbox"/>     | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| (5) an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives   | <input type="checkbox"/>     | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| (6) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions  | <input type="checkbox"/>     | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| (7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies   | <input type="checkbox"/>     | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

**ACADEMIC HONESTY, PLAGIARISM & CHEATING**

This is intentionally failing to give credit to sources used in writing regardless of whether they are published or unpublished. Plagiarism (which also includes any kind of cheating in exams) is a disciplinary offence and will be dealt with accordingly. According to university by laws cheating and plagiarism are serious offences punishable with disciplinary action ranging from simple failure from the exam or project/report, to more serious action (suspension from the university for up to one semester). Disciplinary action is written in student records and may appear in student transcripts. Any act not suitable for a university student will not be tolerated and may lead to formal disciplinary action. Example of this are: getting someone else to take the examinations for you, misrepresentation of your own answer sheet as another's work, cheating, knowingly assisting other students to cheat, abusing the tolerance or breaking the discipline of the class.

**PLEASE KEEP THIS COURSE OUTLINE FOR FUTURE REFERENCE AS IT CONTAINS IMPORTANT INFORMATION!!!**