



EASTERN MEDITERRANEAN UNIVERSITY

FALL 2022-2023 COURSE OUTLINE



COURSE CODE	IENG/MANE492	COURSE LEVEL	4 th Year
COURSE TITLE	Manufacturing and Service Systems Design Project		
COURSE TYPE	Area Core		
LECTURER(S)	Dr. Orhan KORHAN, Dr. Hüseyin GÜDEN		
CREDIT VALUE	(3,0,1)3	ECTS VALUE	9
PREREQUISITES	IENG/MANE490, Submission of IENG410/MANE400 report, graduate semester standing and at least three of the following 5 courses: IENG/MANE314, IENG/MANE323, IENG/MANE461, IENG/MANE372, IENG/MANE431.		
CO-REQUISITE	IENG/MANE441		
DURATION OF COURSE	14 weeks		
WEB LINK:			
RESEARCH ASSISTANTS	Fereshteh Radnezhad, Negar Akbarzadeh, Khaoula Chnina		
TIME TABLE AND PLACE	Tuesday 15:30-17:20(PC-LAB1); Wednesday 14:30-16:20 (IED-101)		
TEXT BOOK	There won't be any specific textbook in this course. The students are referred to the collection of the books on Industrial Engineering and related fields in the EMU Library, which can be searched at: http://library.emu.edu.tr		
CATALOGUE DESCRIPTION	The course consists of a design study of a complex manufacturing or service system. The study includes computer integrated modeling based on multiple realistic constraints such as demand, materials, capacity, location, man-machine, and information requirements. It is a project oriented course that is basically a synthesis of the techniques and methodologies previously covered in other courses. Projects are implemented conforming relevant <u>standards</u> (incl. product, process standards and safety regulations), ethical issues and environmental policies.		
COURSE OBJECTIVES (CO)	To design the structure of a company fitted to the activity of the company in an economic way. (Contributing Student Outcomes 2, 4, 7) 1. Analyzing a market (size, competitors, product types, etc.) and determining market share. (Contributing Student Outcomes 1, 2, 6, 7) 2. To describe and select products. (Contributing Student Outcomes 2, 7) 3. To understand, describe and select technology. (Contributing Student Outcomes 2, 7) 4. Capacity planning. (Contributing Student Outcomes 1, 2, 6, 7) 5. To select production processes to a finished product. (Contributing Student Outcomes 2, 4, 7) 6. To select machinery and equipment in an economic way. (Contributing Student Outcomes 1, 2, 4, 6, 7) 7. To select location for a facility. (Contributing Student Outcomes 1, 2, 6, 7) 8. To design a material handling system. (Contributing Student Outcomes 2, 4, 7) 9. To organize waste management and other environmental behavior for a company. (Contributing Student Outcomes 2, 7) 10. Designing the necessary personnel. (Contributing Student Outcomes 2, 7) 11. Designing facility layout according to the needs. (Contributing Student Outcomes 1, 2, 4, 6, 7) 12. To estimate the energy and water demand of a company. (Contributing Student Outcomes 2, 7) 13. To organize quality management system. (Contributing Student Outcomes 2, 7) 14. To design the information system of a (small) company (Contributing Student Outcomes 2, 7) 15. To select and apply industrial standards concerning to the product and production system of a company. (Contributing Student Outcomes 2, 7) 16. To apply Master Production Schedule (MPS) and Material Requirement Planning (MRP). (Contributing Student Outcomes 1, 2, 6, 7) 17. To design a good inventory management system. (Contributing Student Outcomes 2, 4, 7) 18. To apply project management in the establishment and/or running of a company. (Contributing Student Outcomes 2, 7) 19. To prepare of a financial analysis of a company including its profitability and to apply		

- the results in the feasibility study of establishing the company. (Contributing Student Outcomes 1, 2, 4, 6, 7)
20. 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)

**GENERAL
LEARNING
OUTCOMES
(COMPETENCES)**

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

- Applying fundamental concepts, techniques and methodologies of IE/ME to design a complex industrial or service system
- The importance of familiarity with recent issues as related to practice of Industrial Engineering
- The relationships between various problems of different fields of IE/ME
- Developing the ability to think critically
- 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
- Importance of effective communication with team members, faculty and professionals in the field
- Simulating and predicting the behavior of system design alternatives under various valid conditions
- The importance of standards in engineering and design

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

- The synthesis of the techniques and methodologies of IE/ME
- Working in a project team with faculty advising
- Achieving common goals through proper team work and bearing the consequences of personal choices
- Extracting relevant information from available sources (incl. all forms of information technology, library searching, professionals etc.) related to the project
- Using engineering standards in design
- Considering realistic constraints that influence design
- Performing feasibility studies and financial analysis of a real world project
- Using IE/ME software for decision making
- Generating and assessment of alternative plans
- Effective communication of team members to accomplish project activities
- The ability to design, deliver and defend a group presentation of completed project and sell their solutions to management
- 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:

- Understanding of professional behaviors, engineering and professional ethics
- Sharing the responsibilities and recognition of the need for and an ability to engage in life-long learning
- Role of IE/ME practices in solving real world problems
- Understanding and incorporating human behavior, capabilities and well being in designing safe work system environment
- Importance of environmental sensitivity and human factors in assessment of alternative designs
- Understanding of global, environmental, and social impacts of engineering solutions
- Importance of adhering to work schedules in real world

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.

Assessment Item	Weight (%)
Lab – software applications	20
Progress Report	20
Final Report	40
Oral 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.

DISCUSSION MEETINGS (Contact Hours):

Every week at class time there will be a common meeting at IED203. Students are encouraged to ask questions of clarification during scheduled discussion meetings. It will be beneficial for the team to obtain feedback and advice from the course coordinators. Students may prefer to show and discuss their work on the computer. **No show in the meetings will have negative effect on the final grade. Good discussion including questions may result bonus points!**

Course Withdrawal:

Students are not allowed to withdraw this course.

Software Packages:

Each student is expected to have a background in IE/ME/OR related software packages, and use these available packages in the IE Computer Laboratories: LINDO, LINGO, GINO, STORM, QS, XCELL+, ARENA, SPSS, BESTFIT, MATLAB, MAPLE, ACCESS, etc., some technical drawing packages AUTOCAD, VISIO, Google Sketch etc., general documentation and presentation packages MSWord, Excel, Power Point and internet browsers (e.g. Internet Explorer, Netscape), etc.

Computer Access & Usage:

IE Computer Laboratories are available for the student’s use. Always plan ahead if you rely on the computers in the labs. Increased demand towards the deadlines of the project reports reduce the available computer time. One should also be aware of power failures. Students should always be courteous, considerate and in a professional manner while using the computer facilities of the IE Department.

Announcements:

It is the students’ responsibility to regularly check the announcements on the IENG/MANE492 website.

Attendance:

Students are expected to regularly attend the scheduled discussion meetings, and intelligently participate in these meetings.

Academic

Every student at EMU should behave according to universally accepted norms of behavior and ethics. If a student participates in unlawful unacceptable activities such as listed below, his/her case will be sent to the University Students Disciplinary Committee, and will be treated according to the university by-laws and procedures. Depending on the seriousness of the case, it can lead to a requirement to undertake additional work, failure in the course or in a part of it, suspension from the University or even permanent expulsion from the University:

- *collusion (material copied from another project team’s report with that team’s knowledge),*
- *purloining (material copied from another project team’s report or work without that team’s knowledge),*
- *ghost writing (project team’s report written by third party and presented by a team as their own),*
- *verbatim copying (material copied word for word or exactly duplicated without any acknowledgement of the source),*
- *inappropriate/inadequate acknowledgement (material copied word for word which is acknowledged as paraphrased but should have been in quotation marks, or material paraphrased without appropriate acknowledgements of its source),*
- *getting someone else to take the examinations for a student,*
- *misrepresentation of student’s exam answer sheet as another’s work,*
- *any form of cheating and knowingly assisting other students to cheat in the exams,*
- *abusing the tolerance or breaking the discipline of the class, etc.,*

Note that in each report students will be asked to sign the following statement:

“Academic integrity is expected of all students of EMU at all times, whether in the presence or absence of members of the faculty. Understanding this, I declare that I shall not give, use or receive unauthorized aid in the examination.”

Also, note that on each report the team will be asked to sign the following statement:

“We declare that, except where we have indicated, the work we are submitting in this assignment is our own work.”

Mobile phones must be switched off before entering meetings.

Language: The language of communication in this course is English as the University commits it. Thus, students and staff should avoid the use of other languages in both their oral and written communication during meetings and presentations.

Grade Improvement: Grades for each assessment item will be earned for the required work only. No additional work will be accepted for “extra credit” or “grade improvement”.

NG (Nil-grade): If a project team fails to submit the Progress Report or the Final Report, then all the team members will receive NG at the end of the semester. If a student does not join the study and his/her group members write any of the reports by themselves and not write his name to their report then he/she will take NG. While submitting the reports all the members must be together. **To take part on the discussion meetings is mandatory. Students having attendance to classes OR labs less than 50 percent will get NG regardless to anything else.**

Objections: Any document concerning work, which is used by the course coordinator as the basis of grading will be shown to the student upon request. Students, who feel strong that they have received grades that are improper, have the right of formal appeal. The following rules should be obeyed:

- The objection to any grade must be made to the course coordinator or TA within a week following the announcement of the grades.
- If an error was made in grading or there are questions about the grading of the material, write your questions or comments on a separate sheet of paper and submit this paper to the course coordinator. Objections will be evaluated within one week of receipt of the appeal.

Office Hours: Apart from Tuesday discussion hours, if the students want to ask or discuss anything about their project-work with their course coordinator, they should take an appointment.

Course Instructors Evaluation: EMU is committed to continuous improvement, and seeks students’ input to that process through their participation in instructor evaluation process. Please complete the questionnaire, which will be provided towards the end of semester on Student Portal. Your response is processed so that, unless you wish otherwise, the course coordinator will not be aware of your identity. Please help us to help our students by providing feedback on your experiences in this course. In addition to the end of semester evaluation, you may also provide your feedback at any time during the semester by discussing the matter with the course lecturer during office hours.

Important Dates	Activity	Date
	Progress Report Submission Deadline:	December 10, 2011
	Final Report Submission Deadline	January 7, 2022
	Presentation Date	January 11 and 12, 2022

**Presentation schedule will be announced later

Important Notes:

1. Please keep this course syllabus for future reference as it contains important information. If you lose it, you may download it from course web pages.
2. If you have any question on the coursework, please always refer to this syllabus to obtain the answer yourself first. If the answer is in the syllabus, then **please do not insist on asking the same question to your course coordinators and TA.**

Contribution of course to meeting the requirements of ABET criterion 5:

Mathematics and Basic Sciences : 0 %
 Engineering Science : 25 %
 Engineering Design : 75 %
 General Education : 0 %

RELATIONSHIP OF THE COURSE TO STUDENT OUTCOMES

Student Outcomes	Level of Contribution		
	No	Moderate	High
(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"/>