IE 309 Manufacturing Processes I

Spring 2020-21

Instructor: Erhan Budak (Office: FENS 1059 / Tel: 9519)

Credits: 3

Objectives
Introduce principles of manufacturing processes and equipment, and examine characteristics of different processes in terms of quality, cost, lead time, volume etc. Development of basic background for process selection and analysis.

Course Description
Overview of modern manufacturing technology; introduction to manufacturing processes, description of various conventional and nonconventional applications in industry: casting, metal forming, forging, extrusion, rolling, joining and welding, EDM, ECM, laser machining, abrasive machining; machining processes: turning, milling, drilling etc.

Textbook
S. Kalpakjian and S.R. Schmid, Manufacturing Processes for Engineering Materials, Prentice Hall.

References

J.A. Schey, Introduction to Manufacturing Processes, McGraw-Hill.

P. Oswald, J. Munoz, Manufacturing Processes and Systems, John Wiley and Sons.

Groover, M., Fundamentals of Modern Manufacturing: Materials, processes, and systems, John Wiley, 1999.

E. P. DeGarmo, J.T. Black, Ronald A. Kohser, Materials and Processes in Manufacturing, Wiley, 2003.

Tentative Schedule

Topic	Week
Overview and introduction	1
Manufacturing Properties of Materials	2
Casting processes and equipment	3-5
Forming processes	6-8
Metal removal processes	9-11
Abrasive processes	12
Non-traditional manufacturing processes	13
Joining processes	14

Grading

Midterm	30 %
Final	40 %
Project	20 %
Quizzes	10 %

Exams: Midterm, final and make-up exams will be executed online. The dates and details will be announced later.

Quizzes: There will be short quiz exams during the recitation hours. The questions will be from lecture and recitation material as well as the homeworks. They will be done online as well.

Homeworks: You will be given number of homework assignments throughout the term. The main objective for them is to enhance your knowledge and its application in solving problems. They will be collected by the announced due dates and will be checked. The solutions will be posted in due time.

Make-Up Exam: There will be *one* make-up exam at the end of the term during the final exams (the date will be announced later). No medical report is necessary for taking this exam, but *only* the students who missed one of the exams for any reason may take the make-up.

Projects: The details on the term project will be announced. The objective will be to investigate and analyze the manufacturing steps of a selected product. The projects groups are expected to prepare a progress report during the term in addition to the final project report as well as attend scheduled progress meetings.

Important note: Plagiarism of any kind will not be tolerated and will be severely punished! There will be strict monitoring during the online exams. All reports will be checked with available sources. In your project reports you can of course use all available sources as long as you provide the references; however, they must be written by own words, i.e., no "copy and paste" is acceptable.

The lectures and recitations will be carried out through synchronous online teaching.

You must attend the synchronous Zoom lectures, recitations, etc. and real-time online exams with your SU email account.

For proctored exams, your webcam and microphone should be on during the exam. In the case of non-compliance with this and other declared exam procedures, your exam will be void. Make sure to check that your webcam and microphone function properly before the exam."

Lectures will be given online in the following zoom link:

https://sabanciuniv-edu.zoom.us/j/5453676903