ME 202
MANUFACTURING TECHNOLOGIES

WWW.ME.METU.EDU.TR/COURSES/ME202
Course Staff

COURSE INSTRUCTOR
Prof. Dr. M. A. Sahir ARIKAN

COURSE ASSISTANTS
Akif HACINECİPOĞLU (Office: G-133)
hakif@metu.edu.tr

Burak Şamil ÖZDEN (Office: G-133)
buozden@metu.edu.tr
Objectives-I

• Learn traditional and non-traditional manufacturing processes, related tools, machine tools, equipment, ...

• Gain the ability to identify and to compare the manufacturing processes.

• **Gain the ability to decide on the most appropriate manufacturing process(es) for a specific task.**

• It will be like learning a **new language**!

• New terms for processes, tools, machine tools, equipment, ...
Objectives-II

• During the machine shop practice hours, manufacture some parts personally by using hand tools and conventional/CNC machine tools, thus:

• **Experience the manufacturing environment and some manufacturing processes,**

• **Learn and practice basics of CNC machining by writing part programs and manufacturing parts.**
• Two Midterm Examinations (MT I 25 % - MT II 17 %)
  • Multiple-choice,
  • Closed book and notes.
• Final Examination (40 %)
  • Multiple-choice,
  • Closed book and notes.
• Quizzes (3 %)
  • Number of quizzes : Unknown
  • Dates of quizzes : Unknown
• Machine Shop (15 %)

TOTAL 100 %
REGULAR EXAMINATIONS

Examination dates, hours, and places will be announced by the Mechanical Engineering Department.

MAKE-UP (and RESIT) EXAMINATIONS

Make-up examinations may be given to those with valid excuses (i.e. medical report, ...) approved by the Mechanical Engineering Department.

If you are eligible to take any of the make-up examinations, you must contact the course instructor or the course assistant.

Make-up (and RESIT) examinations may not be of multiple-choice type.

Make-up (and RESIT) examinations will be given after the final.
EXAMINATION RULES

• During the examinations you are only allowed to use pencil and eraser,

• Your mobile phones should be in your handbag, backpack, etc. or in your pocket.

• You are not allowed to use calculators or any type of computers.

• During the regular examinations, you will be given a question booklet and an answer sheet.

• Return both of them to the assistants before you leave the classroom.

• If you do not return both of them, your examination will not be evaluated (will be invalid) and a disciplinary investigation will be started according to the Disciplinary Regulations of Middle East Technical University.
Quizzes

• Evaluation will be out of 1
  • Correct answer 1 - 1.5
  • Partially correct or incomplete answer 0.5 - 0.9
  • Incorrect (but relevant) answer 0.2
  • No answer or irrelevant answer 0


Machine Shop

- **Machine Shop (15%)**
  - Filing
  - Turning
  - CNC Turning
  - CNC Milling
  - Welding
Machine Shop Work

• Duration: about 10 weeks;

• Needs to allocate 3 consecutive hours per week; (excluding lunch break: 12:30 - 13:30)

• A student is only allowed to miss only one week of the machine shop work, without a valid excuse (10 points will be deducted from overall machine shop grade),

• If missed weeks - without a valid excuse - are more than one, letter grade from the course will be NA.

• Course assistants and machine shop technicians will evaluate the machine shop work.
Machine Shop Work

- Students who have taken the course before may not repeat the machine shop work if they have an acceptable grade.
- If they wish, their previous machine shop grade will be considered in letter grade calculation of this semester.
- These students should inform the course assistants.
Machine Shop Work

• Machine shop hours will be arranged until the end of the 2nd week by considering the course schedules of the students.

• For the arrangement, individual course schedules will be collected during lecture hours in the 2nd week.

• Students should have 3 consecutive free hours per week (excluding lunch break: 12:30 - 13:30)

• Machine shop practice will start in the 3rd week of the semester.
Attendance

- Middle East Technical University

(NEW) ACADEMIC RULES AND REGULATIONS CONCERNING UNDERGRADUATE PERIOD OF STUDY, EXAMINATIONS AND ASSESSMENT

http://www.oidb.metu.edu.tr/yonetmelik/yonet/lisans_yonetmelik.html

ATTENDANCE

Article 23

Students must attend classes, practices, examinations and other academic activities.

Students' attendance is followed by the Instructor concerned.
EXAMINATIONS AND ASSESSMENT

Article 24

The student is given a grade by the course instructor by taking into account the midterm examinations, final examinations, the semesters work and attendance.

If your class attendance is less than 70.0%, regardless of your other grades, NA will be given as your COURSE GRADE at the end of the semester.

If your course grade is NA, you will not be able to take the FINAL (and RESIT) examination.
70.0 % Attendance

• Your attendance will be determined by considering the number of lecture hours you have attended and total number of attendances taken during the semester.

• Class attendance will be taken for every lecture hour.

• Why 70 %, but not 100 % ?
The remaining 30 % is for the lecture days in which you are:
  officially participating in a university activity,
  for something personal,
  ..., etc.
70.0 % Attendance

• Your attendance will be determined by considering the number of lecture hours you have attended and total number of attendances taken during the semester.

• Class attendance will be taken for every lecture hour.

• **You should attend at least 70 % of the lectures, regardless of whatever your excuse is; except medical reports.**

• The remaining 30 % is for your excuses.
Attendance

• Class attendance will be taken starting from the first lecture.

• Even if you are planning to add the course afterwards, attend the classes starting from the first lecture.

• For some reason, if you are planning to register to the course afterwards by directly applying to the Mechanical Engineering Department, again attend the classes starting from the first lecture.

Otherwise you will not be accepted.
Middle East Technical University

(NEW) ACADEMIC RULES AND REGULATIONS CONCERNING UNDERGRADUATE PERIOD OF STUDY, EXAMINATIONS AND ASSESSMENT

Article 24

NA - Nonattendance is the grade given to students who have failed to regularly attend courses or have not fulfilled the requirements of course practices, or who have not participated in any of the examinations.

NA is processed like FF in computing grades.
Course Grading

- Previous years’ averages indicate that at the end of the semester your overall average will be close to 70).
- Thus, expect to get letter grades which are close to the ones indicated in the METU Catalogue.
- In general,

  AA is not given to an overall average below 85.00, and DD is not given to an overall average below 55.00.

- In calculating the class overall average, grades of the students who are going to get NA, and grades of the students who have not attended to any of the examinations (who will most probably will get FF) are disregarded.
### Some class overall averages

- **1999-2000-I**: 73.70
- **2000-2001-I**: 67.59
- **2000-2001-II**: 74.75
- **2002-2003-I**: 66.92
- **2002-2003-II**: 70.08
- **2003-2004-I**: 69.18
- **2004-2005-I**: 67.80
- **2005-2006-I**: 71.03
- **2006-2007-I**: 64.20
- **2007-2008-I**: 67.56
- **2007-2008-II**: 67.30
- **2008-2009-I**: 62.94
- **2008-2009-II**: 65.44
- **2009-2010-I**: 67.38
- **2009-2010-II**: 68.97
- **2010-2011-I**: 64.10
- **2010-2011-II**: 68.20
- **2011-2012-I**: 66.81
- **2011-2012-II**: 65.00
- **2012-2013-I**: 64.00
- **2012-2013-II**: 63.64
- **2013-2014-I**: 62.61
- **2013-2014-II**: ??...
Course Policy

ME 202 Manufacturing Technologies

Text Book
Text Book

Course Policy

ME 202 Manufacturing Technologies
Reference Books

   - Third Edition
   - Mikell P. Groover

   - Fourth Edition
   - Mikell P. Groover
Reference Books

- Manufacturing Processes and Equipment
  - George Tlusty

- Manufacturing Processes and Systems
  - Phillip F. Ostwald
  - Jairo Muñoz

- Manufacturing Engineering and Technology
  - Serope Kalpakjian
  - Steven R. Schmid
<table>
<thead>
<tr>
<th>Course Outline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Introduction, Manufacturing Systems</td>
</tr>
<tr>
<td>2. Manufacturing Automation</td>
</tr>
<tr>
<td>3. Metal Cutting (Machining) Basics</td>
</tr>
<tr>
<td>4. CNC Programming for Turning and Milling</td>
</tr>
<tr>
<td>5. Metal Cutting (Machining) Processes</td>
</tr>
<tr>
<td><strong>MT I</strong></td>
</tr>
<tr>
<td>6. Non-Traditional Machining Processes</td>
</tr>
<tr>
<td>7. Metal Working (Hot and Cold) Processes</td>
</tr>
<tr>
<td>8. Casting</td>
</tr>
<tr>
<td>9. Powder Metallurgy</td>
</tr>
<tr>
<td><strong>MT II</strong></td>
</tr>
<tr>
<td>10. Welding, Brazing and Soldering</td>
</tr>
</tbody>
</table>
What to Do?

1. Attend classes, **follow lectures!** (remember Quizzes)

   Attendance will be taken regularly.

   Attend the sections **you have registered!**

   Attendance to different sections will not be accepted.

   Quizzes taken in different sections will not be evaluated.
What to Do?

2. Take notes when necessary
3. Read the textbook
4. Refer reference books
5. Use internet; there are many useful web-sites,
6. Study regularly
7. Attend Machine Shop