Syllabus

(2007 / Fall)

<table>
<tr><td>Subject</td><td colspan="3">Manufacturing processes</td><td>Department</td><td colspan="2">Mechanical and Aerospace Eng.</td></tr>
<tr><td>Subject Number</td><td>446.305A</td><td>Class Number</td><td></td><td>Total Credit / Design Credit</td><td>3 / 0.5</td></tr>
<tr><td>Professor</td><td>Sung-Hoon Ahn</td><td>e-mail</td><td>ahnsh@snu.ac.kr</td><td>Office Phone</td><td>880-7110</td></tr>
<tr><td>Course Web Page</td><td colspan="5">http://fab.snu.ac.kr/</td></tr>
<tr><td>Target Student</td><td colspan="3">MAE junior class</td><td>Recommended Prerequisites</td><td>Solid mechanics, Fundamentals of material engineering</td></tr>
<tr><td>Class Hours</td><td colspan="3">Mon, Wed 14:30~15:45</td><td>Classroom</td><td>301 - 105</td></tr>
<tr><td>Teaching Assistant</td><td colspan="3"></td><td>Office Hour</td><td></td></tr>
<tr><td>Course Objective</td><td colspan="5">◆ To introduce students to the principles of general and special manufacturing processes.
◆ To introduce students to the knowledge of material selection and mechanical characteristics used in manufacturing processes.</td></tr>
<tr><td>Course outline</td><td colspan="5">In this course, the characteristics of materials, manufacturing equipments and manufacturing processes, such as casting, heat treatment, metalworking, machining, grinding, special manufacturing processes, etc, will be introduced. For each manufacturing process, the analysis methods using solid mechanics and plasticity dynamics will be also introduced. The class students should put into groups and perform their project related to the topics of the course. In the end of the course, the groups should submit a report and give a presentation on the project.</td></tr>
<tr><td rowspan="2">Text Book & Reference Book</td><td>Text Book</td><td colspan="4">S. Kalpakjian, "Manufacturing Processes for Engineering Materials", 3rd/4th ed. Addison Wesley</td></tr>
<tr><td>Reference Book</td><td colspan="4">William D. Callister, Jr, "Fundamentals of Materials Science and Engineering", 2nd ed. Wiley
Edward M. Treuf, Paul K. Wright, "Metal Cutting", 4th ed. BH</td></tr>
<tr><td>Grading Plan</td><td colspan="5">Attendance(5%), Assignment(15%), Project(15%), Mid Term(30%), Final Exam(35%)</td></tr>
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Course Plan		
Week	Contents	Remark
1	Chap.1 Introduction	
2	Chap.2 Fundamentals of the Mechanical Behaviour of Materials	
3	Chap.3 Structure and Manufacturing Properties of Metals Material selection for design	
4	Chap.4 Surfaces, Dimensional Characteristics, Inspection, and Quality Assurance	
5	Chap.5 Metal Casting Process and Equipment	
6	Chap.6 Bulk/Sheet Metal Forming Processes	
7	Chap.7 Sheet-Metal Forming Processes	
8	Mid Term Exam	
9	Mid presentation of Project Chap.8 Material Removing Process: Cutting (I)	
10	Chap.8 Material Removing Process: Cutting (II)	
11	Chap.9 Material Removal Process: Abrasive, Chemical, Electrical, and High-Energy Beams	
12	Chap.10 Properties and Processing of Polymers and Reinforced Plastics; Rapid Prototyping	
13	Chap.11 Properties and Processing of Metal Powders, Ceramics, Glasses, and Composites	
14	Chap.12 Joining and Fastening Processes	
15	Final presentation of Project	
16	Final Exam	