

MM 467 Cutting Theory and Machine Tools				DEPARTMENT of MECHANICAL ENGINEERING					
Semester	Methods of Education							Credits	
	Lecture	Recit.	Lab.	Project / Field Study	Homework	Other	Total	Credit	ECTS Credit
7	42	0	-	-	10	23	75	3	3.0
Language	Turkish								
Compulsory / Elective	Elective								
Prerequisites	None								
Course Contents	Cutting theory; basic ortogonal cutting mechanics, measurement of tool forces, plowing force, Ernst and Merchant Theory, friction, tool life and tool wear, cutting economics, cutting fluids and their effects on cutting, cutting tool temperature and calculations. Cutting force, power, machining time calculations and machining parameters-cutting velocity, feedrate, depth of cut-in turning, drilling boring, shaping, planing, milling operations.								
Course Objectives	To provide the knowledge about the theory of machining, machining operations and machine tools which would be useful in the professional life of the graduates.								
Learning Outcomes and Competences	Understanding of basic of machining operations and machine tools								
Textbook and /or Reference	G. Boothroyd and W. A. Knight, Fundamentals of Machining and Machine Tools, Marcel Dekker, Inc., New York, 1989, ISBN: 0-8247-7852-9.								
Assessment Criteria						If any, mark as (x)		Percentage (%)	
	Midterm Exams					X		40	
	Quizzes					X		10	
	Homeworks					X		10	
	Projects								
	Term Paper								
	Laboratory Work								
	Other								
	Final Exam					X		40	
Instructors									
Week	Subject								
1	Cutting mechanics, chip formation, cutting forces, plowing force, chip thickness (theory of Ernst and Merchant)								
2	Cutting mechanics, chip formation, cutting forces, plowing force, chip thickness (theory of Ernst and Merchant)								
3	Friction in metal cutting, tool geometry and chip breakers								
4	Forms of wear in metal cutting, tool life criteria, the tool material								
5	Forms of wear in metal cutting, tool life criteria, the tool material								
6	Economics of metal cutting								
7	Economics of metal cutting								
8	Surface roughness, Cutting fluids								
9	Temperatures in metal cutting								
10	Turning machines. Process calculations								
11	Turning machines. Process calculations								
12	Hole making and sizing operations. Force, torque and power calculations								
13	Straight and contour cutting: Shapers, planers, milling machines. Related calculations								
14	Surface finish operations: Grinding, honing, super finishing, lapping.								