



## AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Metal Cutting							
Course Code		MME530		Couse Level		Second Cycle (Master's Degree)			
ECTS Credit	8	Workload	200 ( <i>Hours</i> )	Theory	3	Practice	0	Laboratory	0
Objectives of the Course		The objective of the course is to teach the basic principles of metal cutting process with emphasis on the underlying theory, assumptions, and modelling issues as well as providing detailed knowledge to engineers.							
Course Content		Typical cutting operations, mechanics of orthogonal and oblique metal cutting, elastic and plastic behavior of materials, friction, wear and tool life, cutting temperatures, cutting fluids, tool materials, finite element modeling of metal cutting.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Demonstration, Discussion, Project Based Study, Individual Study, Problem Solving					
Name of Lecturer(s)									

### Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	10
Final Examination	1	60
Assignment	5	20
Term Assignment	1	10

### Recommended or Required Reading

1	Metal Cutting Principles, Milton C. Shaw , Oxford University Press, 1997.
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Week	Weekly Detailed Course Contents	
1	Theoretical	Introduction to metal cutting
2	Theoretical	Typical metal cutting operations
3	Theoretical	Orthogonal metal cutting
4	Theoretical	Orthogonal metal cutting
5	Theoretical	Oblique metal cutting
6	Theoretical	Elastic and plastic behaviors of materials
7	Theoretical	Friction
8	Intermediate Exam	Midterm Exam
9	Theoretical	Tool wear and tool life
10	Theoretical	Cutting temperatures
11	Theoretical	Cutting fluids
12	Theoretical	Tool materials
13	Theoretical	Metal cutting simulations
14	Theoretical	Metal cutting simulations
15	Theoretical	Metal cutting simulations
16	Final Exam	Final Exam

### Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	11	2	4	66
Lecture - Practice	3	2	3	15
Assignment	5	5	4	45
Term Project	1	15	10	25
Midterm Examination	1	15	2	17



Final Examination	1	30	2	32
Total Workload (Hours)				200
[Total Workload (Hours) / 25*] = ECTS				8
*25 hour workload is accepted as 1 ECTS				

### Learning Outcomes

1	Have knowledge about mechanics of metal cutting
2	Ability to solve problems about cutting operations.
3	Ability to use theoretical knowledge on actual cutting problems
4	Ability to make analysis of a cutting operation by the finite element method.
5	To be able to solve metal cutting problems

### Programme Outcomes (Mechanical Engineering (English) Master)

1	To be able to access wide and deep information with scientific researches in the field of Engineering, evaluate, interpret and implement the knowledge gained in his/her field of study
2	To be able to complete and implement "limited or incomplete data" by using the scientific methods
3	To be able to consolidate engineering problems, develop proper method(s) to solve and apply the innovative solutions to them
4	To be able to develop new and original ideas and method(s), to develop new innovative solutions at design of system, component or process
5	To be able to gain comprehensive information on modern techniques, methods and their borders which are being applied to engineering
6	To be able to design and apply analytical, modeling and experimental based research, analyze and interpret the faced complex issues during the design and apply process
7	To be able to gain high level ability to define the required information and data
8	To be able to work in multi-disciplinary teams and to take responsibility to define approaches for complex situations
9	To be able to transfer of the process and results of studies at national and international environments systematic and clear verbal or written
10	To be able to be aware of social, scientific and ethical values guarding adequacy at all professional activities and at the stage of data collection, interpretation, and announcement
11	To be able to become aware of new and developing application of profession and ability to analyze and study on those applications
12	To be able to interpret engineering application's social and environmental dimensions and it's compliance with the social environment

### Contribution of Learning Outcomes to Programme Outcomes 1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High

	L1	L2	L3	L4	L5
P1	3	3	3	3	4
P2	4	4	4	4	5
P3	5	5	5	5	3
P4	4	3	3	3	5
P5	5	4	4	4	4
P6	3	5	5	5	3
P7	4	3	3	3	5
P8	5	4	4	4	4
P9	3	5	5	5	3
P10	4	3	3	3	3
P11	5	4	4	4	4
P12	4	5	5	5	5

