



T.C. ESKİŞEHİR OSMANGAZI UNIVERSITY
ARCHITECTURE AND ENGINEERING FACULTY
MECHANICAL ENGINEERING DEPARTMENT

COURSE INFORMATION FORM

SEMESTER	SPRING
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COURSE CODE	151818xxx-151838xxx	COURSE NAME	STEAM POWER PLANTS, N.Ö., İ.Ö.
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SEMESTER	WEEKLY COURSE PERIOD			COURSE OF			
	Theory	Practice	Laboratory	Credit	ECTS	TYPE	LANGUAGE
8	3	0	0	3	5	COMPULSORY () ELECTIVE (X)	ENGLISH

COURSE CATAGORY

Basic Science	Basic Engineering	Mechanical Engineering [if it contains considerable design, mark with (√)]	Social Science
	X	()	

ASSESSMENT CRITERIA

	Evaluation Type	Quantity	%
MID-TERM	Mid-Term	1	40
	Quiz		
	Homework		
	Project		
	Report		
	Others (.....)		
FINAL EXAM		1	60

PREREQUIEITE(S)

COURSE DESCRIPTION

Introduction to steam turbines, the impulse principle, the velocity diagram, optimum blade speed, impulse turbines, the single-stage impulse turbine, compounded-impulse turbines, the velocity-compounded impulse turbine, the pressure-compounded impulse turbine, the reaction principle, reaction turbines, optimum blade speed, axial thrust, twisted blades, turbine losses, supersaturation, fluid friction, leakage, moisture loss, leaving loss, heat-transfer losses, mechanical and electrical losses, turbine efficiencies, turbine arrangements, combination turbines, turbine configurations, turbine rotors, problems.

COURSE OBJECTIVES

To give students detailed knowledge on steam turbines, energy transfer, work and power, and steam turbine science and power plant technology.

ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION

After taking up the course, the students will be capable to analyse, understand steam turbine performance, energy transfer, work and power, and steam turbine systems; and also follow and understand the new developments in the steam turbine science and power plant technology area, and put their skills in practice in the field of steam turbine technology in industry.

COURSE OUTCOMES

1.Analyses the steam turbine performance. 2.Knows the energy transfer. 3.Recognizes the stage velocity diagrams. 4.Comprehends the turbine work and power. 5.Determines the steam turbine efficiency, torque and shaft power. 6.Identifies the multiple steam turbines.

TEXTBOOK

M. M. El-Wakil, " POWERPLANT TECHNOLOGY ", McGraw-Hill Book Company, International Student Edition, 1985.

OTHER REFERENCES

Philip J. Potter, " POWER PLANT THEORY AND DESIGN ", Second Edition, John Wiley & Sons, Inc., New York, 1959.
A. T. Sayers, " HYDRAULIC AND COMPRESSIBLE FLOW TURBOMACHINES ", McGraw-Hill Book Company, 1990.

TOOLS AND EQUIPMENTS REQUIRED

COURSE SYLLABUS	
WEEK	TOPICS
1	Introduction to steam turbines, the impulse principle, the velocity diagram,
2	optimum blade speed, impulse turbines, the single-stage impulse turbine,
3	compounded-impulse turbines, the velocity-compounded impulse turbine,
4	the pressure-compounded impulse turbine,
5	problems,
6	the reaction principle, reaction turbines,
7	optimum blade speed, axial thrust, twisted blades, problems,
8	Mid-Term Examination
9	Mid-Term Examination
10	turbine losses, supersaturation, fluid friction,
11	leakage, moisture loss, leaving loss, heat-transfer losses,
12	mechanical and electrical losses, turbine efficiencies, turbine arrangements,
13	combination turbines, turbine configurations, turbine rotors,
14	problems.
15,16	Final Exam

NO	PROGRAM OUTCOMES	3	2	1
1	Sufficient knowledge of engineering subjects related with mathematics, science and Mechanical Engineering ; an ability to apply theoretical and practical knowledge on solving and modeling of Mechanical Engineering problems.	[X]	[]	[]
2	Ability to determine, define, formulate and solve complex Mechanical Engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods.	[X]	[]	[]
3	Ability to design a complex system, a component and/or an engineering process under real life constraints or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods.	[]	[]	[X]
4	Ability to develop, select and use modern methods and tools required for Mechanical Engineering applications; ability to effective use of information technologies.	[]	[]	[X]
5	In order to investigate Mechanical Engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results.	[]	[X]	[]
6	Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence.	[]	[X]	[]
7	Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language.	[]	[X]	[]
8	Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement.	[X]	[]	[]
9	Understanding of professional and ethical issues and taking responsibility	[X]	[]	[]
10	Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development.	[]	[]	[X]
11	Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions.	[]	[]	[X]
1:None. 2:Partially contribution. 3: Completely contribution.				

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