

ENERGY SYSTEMS ENGINEERING EDUCATION PLAN
(Before 2025-2026)

FIRST SEMESTER					
Code		Name	Credits	ECTS	Prerequisite/ Corequisite
PHYS	121	General Physics I	(3-2)4	7	
MATH	141	Basic Calculus I	(3-2)4	5	
CHEM	121	General Chemistry I	(3-0)3	5	
CHEM	141	General Chemistry Lab I	(0-2)1	2	
ENG	101	Development of Reading and Writing Skills I	(3-0)3	3	
ESE	101	Introduction to Energy Systems Engineering	(2-0)2	5	
ME	113	Computer Aided Technical Drawing I	(2-2)3	3	
			20	30	

SECOND SEMESTER					
Code		Name	Credits	ECTS	Prerequisite/ Corequisite
PHYS	122	General Physics II	(3-2)4	8	
MATH	142	Basic Calculus II	(3-2)4	6	
CHEM	122	General Chemistry II	(3-0)3	5	
CHEM	142	General Chemistry Lab II	(0-2)1	2	
ENG	102	Development of Reading and Writing Skills II	(3-0)3	3	
ESE	104	Introduction to Computer Programming	(2-2)3	4	
MATH	265	Basic Linear Algebra	(3-0)3	4	
GCC	101	Career Planing and Development	(2-0)NC	2	
			21	34	

THIRD SEMESTER					
Code		Name	Credits	ECTS	Prerequisite/ Corequisite
ESE	201	Thermodynamics I	(2-2)3	6	
MATH	255	Differential Equations	(4-0)4	6	
ME	221	Statics	(3-0)3	5	
MSE	211	Materials Science and Engineering	(3-0)3	5	
HIST	201	Principals of Atatürk I	(2-0)NC	2	
TURK	201	Turkish Language I	(2-0)NC	2	
		Non-technical Elective	(3-0)3	3	
			16	29	

FOURTH SEMESTER					
Code		Name	Credits	ECTS	Prerequisite/ Corequisite
ESE	202	Thermodynamics II	(2-2)3	6	ESE 201
ESE	204	Measurement Techniques	(2-2)3	5	
ESE	212	Numerical Methods in Energy Systems Engineering	(3-2)4	6	ESE104 and MAHT141
ESE	230	Fundamentals of Electrical and Electronic Circuits	(3-0)3	4	
ESE	232	Probability and Statistics	(3-0)3	5	

HIST	202	Principals of Atatürk II	(2-0)NC	2	
TURK	202	Turkish Language II	(2-0)NC	2	
			16	30	
FIFTH SEMESTER					
Code		Name	Credits	ECTS	Prerequisite/ Corequisite
ESE	301	Heat Transfer	(4-0)4	6	
ESE	311	Fluid Mechanics I	(3-0)3	6	
ESE	321	Mass and Energy Balances	(3-0)3	5	
ESE	331	Electromechanical Energy Conversion	(4-0)4	6	
		Restricted Elective	NC	7	
			14	30	
SIXTH SEMESTER					
Code		Name	Credits	ECTS	Prerequisite/ Corequisite
ESE	312	Fluid Mechanics II	(3-0)3	6	ESE 311
ESE	322	Mass Transfer	(3-0)3	6	
ESE	342	Energy Systems Engineering Economics	(3-0)3	5	
ME	352	System Analysis and Control	(4-0)4	5	
		Technical Elective	(3-0)3	5	
ENG	302	Technical Writing and Communication	(3-0)3	3	
			19	30	
SEVENTH SEMESTER					
Code		Name	Credits	ECTS	Prerequisite/ Corequisite
ESE	401	Energy Systems Engineering Design I	(3-2)4	8	
		Technical Elective	(3-0)3	5	
		Technical Elective	(3-0)3	5	
		Technical Elective	(3-0)3	5	
		Restricted Elective	NC	7	
			13	30	
EIGHT SEMESTER					
Code		Name	Credits	ECTS	Prerequisite/ Corequisite
		Restricted Elective	(2-4)4	11	ESE 401
MAN	211	Communicational and Management Skills for Engineers	(3-0)NC	3	
		Non-technical Elective	(3-0)3	3	
		Non-technical Elective	(3-0)3	3	
		Technical Elective	(3-0)3	5	
		Technical Elective	(3-0)3	5	
			16	30	
TOTAL CREDITS			135	243	

ENERGY SYSTEMS ENGINEERING ELECTIVE COURSE LIST

Restricted Electives					
Code		Name	Credits	ECTS	Prerequisite/ Corequisite
ESE	300	Summer Practice I	NC	7	
ESE	400	Summer Practice II	NC	7	
ESE	402	Energy Systems Engineering Design II	(2-4)4	11	ESE401

Technical Electives					
Code		Name	Credits	ECTS	Prerequisite/ Corequisite
ESE	404	Engineering Mathematics	(3-0)3	5	MATH255
ESE	405	Heat Exchanger Design	(3-0)3	5	
ESE	406	Introduction to Geothermal Energy	(3-0)3	5	
ESE	407	Energy Efficiency	(3-0)3	5	
ESE	408	Exergy	(3-0)3	5	
ESE	409	Heating Ventilating and Air Conditioning	(3-0)3	5	ESE312
ESE	410	Introduction to Wind Energy	(3-0)3	5	
ESE	411	Geographic Information Systems for Energy Systems Engineers	(3-0)3	5	
ESE	420	Introduction to Bioenergy	(3-0)3	5	
ESE	421	Unit Operations in Energy Processes	(3-0)3	5	
ESE	422	Waste to Energy	(3-0)3	5	
ESE	423	Hydrogen Energy and Fuel Cells	(3-0)3	5	ESE201 and ESE202
MTH	424	Hydrogen and Fuel Cell Technology	(3-0)3	5	ESE201 and ESE202
MTH	425	Climate Change Oriented Planning	(3-0)3	5	
MTH	426	Modelling and Simulation of Energy-Oriented Chemical Processes	(3-0)3	5	ESE321
ESE	431	Introduction to Power System Analysis	(3-0)3	5	
ESE	432	Power System Analysis and Control	(3-0)3	5	ESE 431
ESE	440	Introduction to Computational Fluid Dynamics	(2-2)3	5	ESE301 and ESE311
ESE	441	Introduction to Flow Through Porous Media	(3-0)3	5	ESE311
ESE	442	Chemistry in Geothermal Systems	(3-0)3	5	
ESE	443	Integrative Energy Systems for Buildings	(3-0)3	5	
ESE	498	Supplementary Curricular Courses	(3-0)3	5	
ESE	499	Cooperative Education Course	(0-6)3	5	