

UNDERGRADUATE CURRICULUM (2023)

**effective for students who start their first year in September 2023.

First Semester					Second Semester				
Course Code	Course Name	Credit	ECTS		Course Code	Course Name	Credit	ECTS	
MSE 100	Introduction to Materials Science and Engineering	1-0	1	1	MSE 120	Introduction to Computer Programming	2-2	3	4
MSE 113	Computer Aided Engineering Graphics	2-2	3	4	CHEM 102	General Chemistry II	4-0	4	5
CHEM 101	General Chemistry I	4-0	4	5	CHEM 132	General Chemistry Lab II	0-4	2	2
CHEM 131	General Chemistry Lab I	0-4	2	2	ENG 102	Development of Reading and Writing Skills II	3-0	3	3
ENG 101	Development of Reading and Writing Skills I	3-0	3	3	MATH 142	Basic Calculus II (pre MATH 101 & MATH 141)	3-2	4	6
MATH 101	Precalculus	2-0	0	2	PHYS 102	General Physics II	2-2	3	6
MATH 141	Basic Calculus I	3-4	4	5	PHYS 112	General Physics Lab II	0-2	1	2
PHYS 101	General Physics I	2-2	3	6	GCC 101	Career Planning and Development	2-0	0	2
PHYS 111	General Physics Lab I	0-2	1	2					
			21	30				20	30

Third Semester					Fourth Semester				
Course Code	Course Name	Credit	ECTS		Course Code	Course Name	Credit	ECTS	
MSE 201	Materials Science I	4-0	4	6	MSE 202	Materials Science II (pre MSE 201)	4-0	4	6
MSE 205	Materials Thermodynamics I	3-0	3	4	MSE 208	Materials Thermodynamics II	3-0	3	5
MSE 215	Materials Physics	3-0	3	5	MSE 210	Materials and Processes in Manufacturing	3-0	3	5
MATH 241	Calculus III (pre MATH 142)	3-0	4	5	MSE 222	Applied Mathematics for MSE (pre MATH 241 & MATH 245)	4-0	4	7
MATH 255	Differential Equations (pre MATH 141)	4-0	4	6	ENG 302	Technical Writing and Communication	3-0	3	3
HIST 201	Principles of Ataturk I	2-0	0	2	HIST 202	Principles of Ataturk II	2-0	0	2
TURK 201	Turkish Language I	2-0	0	2	TURK 202	Turkish Language II	2-0	0	2
			18	30				17	30

Fifth Semester					Sixth Semester				
Course Code	Course Name	Credit	ECTS		Course Code	Course Name	Credit	ECTS	
MSE 300	Summer Practice I	0-0	0	5	MSE 310	Materials Characterization (pre MSE 202)	3-0	3	4
MSE 301	Phase Diagrams	3-0	3	5	MSE 312	Numerical Methods and Modeling	2-2	3	5
MSE 305	Transport Phenomena (pre MSE 222)	3-0	3	5	MSE 316	Materials Lab II	2-2	3	4
MSE 307	Physical Metallurgy(pre MSE 201)	3-0	3	5	MSE 318	Introduction to Solid State Physics (pre MSE 215)	3-0	3	5
MSE 309	Mechanical Behavior of Materials (pre MSE 202)	3-0	3	5	ECON 205	Principles of Economics	3-0	3	4
MSE 311	Materials Lab I (pre MSE 202)	2-2	3	5	TE I	Technical elective	3-0	3	5
			15	30	NTE I	Nontechnical elective	3-0	3	3
								21	30

Seventh Semester					Eighth Semester				
Course Code	Course Name	Credit	ECTS		Course Code	Course Name	Credit	ECTS	
MSE 400	Summer Practice II	0-0	0	7	MSE 448	Introduction to Polymer Science	3-0	3	5
MSE 451	Materials Design	3-0	3	7	MSE 452	Graduation Project	0-6	3	12
MSE 479	Ceramic and Glass Materials	3-0	3	5	TE III	Technical Elective	3-0	3	5
MAN 211	Corporate Communication and Management Skills for Engineers	3-0	0	3	TE IV	Technical Elective	3-0	3	5
TE II	Technical Elective	3-0	3	5	NTE III	Nontechnical elective	3-0	3	3
NTE II	Nontechnical elective	3-0	3	3					
			12	30				15	30

Total: 139 240

Technical Elective Courses

Course Code	Course Name	Credit	ECTS
MSE 105	Materials in Design	3-0 3	5
MSE 211	Materials Science and Engineering	3-0 3	5
MSE 461	Composite Materials	3-0 3	5
MSE 462	Soft Materials	3-0 3	5
MSE 464	Extractive Metallurgy of non-Ferrous Materials	3-0 3	5
MSE 471	Spectroscopic Characterization of Materials	3-0 3	5
MSE 472	Materials in Bioscience	3-0 3	5
MSE 473	Physical Properties of Crystals	3-0 3	5
MSE 474	Applied Numerical Methods	2-2 3	5
MSE 476	Electroceramic Materials and Electrochemical Devices	3-0 3	5
MSE 477	Iron and Steel Making	3-0 3	5
MSE 481	Smart Materials and Structures	3-0 3	5
MSE 483	Materials Degradation	3-0 3	5
MSE 484	Powder Metallurgy	3-0 3	5
MSE 485	Energetic Materials	3-0 3	5
MSE 486	Heat Treatment of Metals	3-0 3	5
MSE 488	Porous Materials	3-0 3	5
MSE 489	Supplementary Curricular Courses	3-0 3	5
MSE 499	Cooperative Education Course	0-6 3	10