

B.Sc curriculum of Materials Science and engineering

	General courses	Basic courses	Specialized courses	Optional courses	Sum
Theoretical credits	20	26	60	20	126
Practical credits	2	4	8	-	14

1st semester				
Course NO.	Course type	Course name	credit	prerequisite
1	B	General Calculus I	3	-
2	B	Physics I	3	-
3	B	Laboratory of Physics I	1	2
4	B	General Chemistry	3	-
5	B	Laboratory of General Chemistry	1	4
6	B	Industrial drawing	2	-
7	G	English	3	-
8	G	Physical Education I	1	-

2nd semester				
Course NO.	Course type	Course name	credit	prerequisite
9	B	General Calculus II	3	1
10	B	Physics II	3	2
11	B	Laboratory of Physics II	1	10
12	S	Crystallography and Laboratory	3	4
13	S	Statics	2	2
14	S	Introduction to the History of materials engineering	2	-
15	G	Persian Literature	3	-
16	G	Physical Education II	1	8

3rd semester				
Course NO.	Course type	Course name	credit	prerequisite
17	S	Physical Chemistry of Materials	3	2,9

18	B	Differential Equations	3	9
19	S	Basics of Electrical Engineering	2	10
20	S	Basics of Electrical Engineering (Lab)	1	19
21	S	Physical metallurgy I	3	12
22	B	Computer programming	2	-
23	S	Mechanics of materials	3	13
24	G	Islamic Studies	2	-

4th semester				
Course NO.	Course type	Course name	credit	prerequisite
25	B	Engineering Mathematics	3	18
26	S	Mechanical Properties of Materials I	3	23
27	S	Principles of solidification and casting	3	21
28	S	Thermodynamics of materials I	3	17
29	B	Numerical methods	2	22
30	S	Metallography lab	1	21
31	B	General workshop	1	-
32	G	Islamic Studies	1	-

5th semester				
Course NO.	Course type	Course name	credit	prerequisite
33	S	Physical metallurgy II	2	21
34	S	Transport Phenomena in Materials Engineering	2	18
35	S	Corrosion and protection of materials	2	28
36	S	Principles of materials production	3	28
37	S	Welding and joining of materials	3	27
38	S	Mechanical Properties of Materials I (lab)	1	26
39	O	Laboratory of Solidification and Casting	1	27
40	S	Fundamentals of Metal Forming I	3	26
41	G	Islamic Studies	2	-

6th semester				
Course NO.	Course type	Course name	credit	prerequisite
42	S	Heat treatment	2	21
43	S	Fundamentals of ceramic engineering	3	80 passed credit
44	S	Principle of surface engineering	2	25
45	O	composite materials	2	80 passed credit
46	S	Fundamentals of polymer engineering	3	80 passed credit
47	S	English in materials science	2	-
48	S	Heat treatment Lab	1	42
49	O	Mechanical Properties of Materials II	2	26
50	G	Islamic Studies	2	-

7th semester				
Course NO.	Course type	Course name	credit	prerequisite
51	S	Materials characterization and analysis techniques	2	100 passed credit
52	S	Engineering design and material selection	2	100 passed credit
53	O	Nanomaterials	2	100 passed credit
54	O	Biomaterials	2	100 passed credit
55	S	Scientific communication skills	1	100 passed credit
56	S	B.Sc project	3	100 passed credit
57	O	Optional courses	4	100 passed credit
58	G	Islamic Studies	2	-

8th semester				
Course NO.	Course type	Course name	credit	prerequisite

59	S	Industrial internships	1	100 passed credit
60	O	Optional courses	9	100 passed credit
61	G	Family planning and population	2	-
62	G	Islamic Studies	2	-

B: Basic, S: Specialized, G: General, O: Optional