M.Sc. in Materials Science & Engineering

Joint Program

Course Information

The Materials Science and Engineering Faculty of K. N. Toosi University of Technology (KNTU), Iran and the Materials Science and Engineering Faculty of National University of Science and Technology (MISIS), Russia are proudly offering a Master of Science (M.Sc.) in Advanced Materials Science.

This joint program of KNTU and MISIS universities will be held in 24 months. Upon successful completion of this program, candidates are entitled to the Master of Science degrees. Candidates will receive the Advanced Materials Science diploma from the MISIS university. In addition, M.Sc. degree of Characterization and Selection of Engineering Materials will be awarded by the KNTU. This program includes 34 units according to the Iranian standards and 120 credits based on the Russian rules. Candidates will pass 9 units (equivalent to 28 credits) of the courses at KNTU in the first semester. The remaining 25 units (equivalent to 92 credits) are conducted at MISIS during 3 semesters. The final M.Sc. project (6 units from 25 units) will be supervised jointly by the professors of KNTU and MISIS universities. The details of the program can be seen in Table.

Details of M.Sc. course in Advanced Materials Science

Semester	Courses	Unit	Credit
1	Advanced Thermodynamic of Materials	2	28
	Advanced Solidification	2	
	Dislocation Theory	3	
	Finite Element Method	2	
Total		**9**	**28**
2	Foreign Language	11	2
	Modelling and optimization in physical metallurgy		5
	Development of metallic materials		5
	Elective 3 (1 discipline to choose)		5
	Modern equipment and techniques for investigation of structure and properties of metallic alloys		
	SHS process as a basis of synthesis of inorganic materials		
	Methods of surfaces and interfaces investigation		
	Elective 4 (1 discipline to choose)		4
	Diffusion in solids		
	Magnetic materials		
	Nanofilms: fundamental principles, characterization, testing, and application. Methods of contact and non-contact characterization of surface topography		

	Research Practice		5
	Practice 2		2
	Scientific research		4
Total		**11**	**32**
3	Elective 5 (1 discipline to choose)	8	4
	Biomaterials for medical services		
	Disperse-strengthened by nanoparticles tribological coatings. Nanofilms for mechanical engineering and medicine		
	Amorphous metallic alloys		
	Elective 6 (1 discipline to choose)		4
	Corrosion and protection of the metallic materials		
	Friction and wear of coatings		
	Thermal and thermomechanical treatment of special steels and alloys		4
	Management of Quality		2
	Project Management		3
	Practice 3		2
	Scientific research		11
Total		**8**	**30**
4	Scientific research 2	6	21
	Final attestation		9
Total		**6**	**30**
Program Total		**34**	**120**

Course aims and Learning outcomes

Aims

- Expand a critical understanding of suitable tools.
- Present new methods and techniques in the field of Advanced Materials Science.
- Achieve the necessary skills in developing tools for the processing, transformation, manufacturing, modeling, and analysis of Advanced Materials Science.
- Development of new advanced materials.

Learning outcomes

- Obtaining a comprehensive knowledge in different fields of Advanced Materials Science.
- Analyzing a given problem in the field of Advanced Materials Science and finding the appropriate solutions for solving the problem.

- Applying the numerical methods for the design of advanced materials.

Processes and requirements for admission:

The candidates who apply for this program should have the following qualification:

- B.Sc. in: Materials science, Mechanical engineering, Physics, or Chemistry.
- The admission in M.Sc. program is based on a competitive national exam by National organization of Educational Testing (NOET). In addition, the introduced volunteers by NOET should take an interview.

Calendar

The education calendar of the joint program is shown in Table.

Capacity	Applying Date	Starting date
15	Jun. 2017	Sept. 2017

Notes

- The program is in English Language.
- Although in the first step the Standard English language degree is not necessary, but the following internationally recognized test results are encouraged.

TOEFL Paper-based Test (PBT)	550
TOEFL Internet-based Test	80
British Council / IELTS	6
Cambridge	CPE/CAE