



Course Syllabus

1. Course Title:

Basics of 3D Modeling

2. Academic Level:

Bachelor

3. ECTS Credits:

5 ECTS

4. Semester:

5, autumn semester

5. School/Department:

Department of Engineering Graphics and Computer Design, Institute of Radio Engineering Systems and Control

6. Location:

22 Chekhova Street, building B, Taganrog city

7. Instructor:

Professor Iftikhar Abbasov, ibabbasov@sfedu.ru

8. Language of Instruction:

English

9. Course Description:

Mastering the basic concepts and general principles of operation of three-dimensional graphics programs, mastering the skills of working in a three-dimensional computer modeling environment

10. Course Aims:

The purpose of studying the discipline: mastering the basic concepts and general principles of operation of three-dimensional graphics programs, mastering the skills of working in a three-dimensional computer modeling environment. As a result of studying the course, students should acquire the necessary knowledge and skills to create realistic models of objects and scenes from the field of industrial design.

11. Specific entry requirements (if any):

The study of the discipline "Fundamentals of 3D modeling in industrial design" is based on the knowledge of students obtained from studying previous disciplines in computer science and computer graphics.

12. Course Content:

- 1 Basic terms and definitions in industrial design. Genesis of design. Types and functions of design
- 2 Basics of design. Tasks and types of CAD. 3D modeling. Review of programs Compass 3D, AutoCAD, Inventor, etc.
- 3 Design methodology. Life cycle stages and product design stages.
- 4 Shaping of an industrial product
- 5 Computer modeling using extrusion, shear, and rotation methods.
- 6 Stages of analysis of the design of an industrial product. Collecting information about the product. Compilation of a reference series of analogue products and analysis of functional characteristics
- 7 Analysis of the conformity of the design shape, material and manufacturability of the product. Dimensional design analysis
- 8 Computer modeling using lofting methods, surface modeling methods
- 9 Solid modeling methods
- 10 Features of solid modeling, graphic primitives and Boolean operations.
- 11 Methods of shading and assigning materials to objects.

13. Intended Learning Outcomes:

As a result of mastering the discipline, the student must:

- know: types and functions of industrial design, stages of the life cycle and stages of product design, shaping of an industrial product, types of CAD systems used for 3D modeling in industrial design.
be able to: use tools for the design and 3D modeling of parts and assemblies of an industrial product.
master: the basics of computer modeling, visualization of industrial design products.

14. Learning and Teaching Methods:

The basis of the technology of the teaching process of the discipline "Fundamentals of 3D modeling in industrial design" is the conduct of lectures and practical classes. Classes are conducted remotely or in equipped computer classes with an individual workstation for each student.

15. Methods of Assessment/Final assessment information:

Interim certification form: test in the 5th semester.

16. Reading List:

1. Abbasov I.B. A Fascinating Journey into the World of 3D Graphics with 3ds Max. Amazon Digital Services LLC, 2017. 239 p. ASIN: B076333ZQD [Electronic resource]
https://www.amazon.com/Fascinating-Journey-into-World-Graphics-ebook/dp/B076333ZQD/ref=asap_bc?ie=UTF8
2. Jeffrey M. Harper Mastering Autodesk 3ds Max 2013. Sybex. 2012. 1008 p.
https://www.amazon.com/Mastering-Autodesk-3ds-Max-2013/dp/1118129717/ref=sr_1_1?s=books&ie=UTF8&qid=1511004272&sr=1-1&keywords=Mastering+Autodesk+3ds+Max+2013

3. Derakhshani D., Derakhshani R.L. Autodesk 3ds Max 2016 Essentials. Sybex. 2015. 444 p.
https://www.amazon.com/Autodesk-3ds-Max-2016-Essentials/dp/1119059763/ref=sr_1_3?s=books&ie=UTF8&qid=1511003189&sr=1-3&keywords=3ds+Max&dpID=514pnZ0nO4L&preST= SX218 BO1,204,203,200 QL40 &dpSrc=src_h