«The Kharkov Institute of Technology will need to continue to grow for a very long time. Its life will not be measured in decades, but in centuries … and the number of engineers it graduates will not be in the tens of thousands, but in the hundreds of thousands».

V.L. Kirpichev
Specialty 122 Computer Science.
Modeling, engineering and computer graphics

Level I: Bachelor’s Degree
Level II: Master’s Degree
EDUCATION FOCUS

Development of software for various purposes

Geometric modeling of objects, phenomena and processes

Elaboration of computer games components

Development of a software add-on to create a control code, which is used by the CNC system

Image processing

Finished part

Modeling of heat transfer by radiation with the calculation of the forms of factors
Visualization of architectural and construction projects

Formation of engineering constructions parts and assemblies

Development of WEB-sites

Creation of form style of enterprises and organizations
**PROSPECTS OF EMPLOYMENT**

<table>
<thead>
<tr>
<th>Machine-building enterprises</th>
<th>Developers of software for various purposes</th>
<th>Computer game developers</th>
</tr>
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<tbody>
<tr>
<td><img src="image1.png" alt="Machine-building enterprise" /></td>
<td><img src="image2.png" alt="Software developers" /></td>
<td><img src="image3.png" alt="Computer game developers" /></td>
</tr>
</tbody>
</table>

**Developer:**
- Machine-building enterprises
- Computer game developers
- Developers of software for various purposes
WEB - office

Construction companies and architectural offices

Advertising agencies
The main educational disciplines of the educational program of the Level I: Bachelor’s Degree could help to study:

- Basics of graphic composition
- Vector and raster graphics
- 3D modeling

- Learning the basics of composition
- Modeling of the character for computer game
- Creating and editing a bitmap
- Creative work in vector graphics
- Processing of artistic images
Geometric modeling in computer graphics

Graphic design systems

WEB programming

The result of the individual task about fractal graphics visualization

Design document and 3D model of detail

The fragment of application part of course project
The main educational disciplines of the educational program of the Level II: Master’s Degree in specialization "Geometric modeling and graphic information technologies" could help to study:

Simulation of special effects in computer graphics

Technologies for recognizing geometric images and computer vision

Examples of course projects

Image transformation in shades of gray

The result of Sobel's work

Feature extraction (histogram of oriented gradients)
Methodology of scientific research

Geometric modeling of objects, phenomena and processes

Programming of graphic systems

Graphical results of solving problems on the theme of "theory of curves"

Graphical representation of physical fields models

Modeling of dynamic objects

The interface of the course work: determination of the sea borders from the satellite

The histogram of the distribution of parameters
The Department of Geometric Modeling and Computer Graphics occupies the 6th floor of the high-rise educational building U1. It has 8 training venues, an array of training models and engineering units, and a training room well equipped with computers. Classes are held with multimedia assistance. Students often receive top places in competitions of student scientific works or olympiads of academic subjects. They also present papers at various scientific conferences, and participate in a wide range of research and educational projects.
At the Department of Geometric Modeling and Computer Graphics highly qualified professors and associate professors – including 2 doctors of technical sciences and 16 candidates of technical sciences – are engaged in professional activities.

After receiving a master’s degree, those wishing may continue in educational programs of the Level III of higher education in order to attain a Ph.D.

The main emphasis of the scientific activity of the department:

- Problems relating to objects formation and visualization of their geometric models;
- Problems relating to geometric modeling of complex dynamic systems;
- Problems relating to gear quality and durability;
- Problems relating to the recognition of geometric images, technologies animation and rendering;
- Development of virtual products based on the creation of two-dimensional and three-dimensional models.

The head of the department:

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Graphics

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