

## Master programs taught in English:

### Tomsk Polytechnic University

[http://iie.tpu.ru/en/3\\_programs\\_english\\_master.php](http://iie.tpu.ru/en/3_programs_english_master.php)

General Information	Important information	Courses	Graduates' areas of activity
<p><b>Computer Simulation of Material Production, Processing and Treatment</b></p> <p>The program is focused on the fundamental physical and technical training of graduates to be successfully employed in different fields of research and development of materials and engineering. In the basis of the Master's educational program there are core courses in physics, mathematics, material science, physical chemistry and surface physics, for students to obtain special knowledge and skills according to Russian and international educational standards. Education deals with theoretical and practical study in the fields of modern material science of organic polymers, non-organic metals and ceramics to be applied in different industries to develop novel engineering structures and technologies, methods for investigation and testing of materials.</p> <p><a href="http://iie.tpu.ru/en/3_master_CAD.php">http://iie.tpu.ru/en/3_master_CAD.php</a></p>	<p><b>Entrance requirements</b></p> <ul style="list-style-type: none"> <li>• 4 years Bachelor Degree Certificate.</li> <li>• Proof of the English language proficiency: certificate TOEFL (paper 500 and better; web 55 and better) or IELTS (5.5 and better), First Certificate in English (FCE) or entrance test result.</li> <li>• Sufficient result of Interdisciplinary exam.</li> </ul>	<ul style="list-style-type: none"> <li>• Computer Simulation of Materials and Technologies,</li> <li>• Modern Surface Hardening and Coating Technologies,</li> <li>• Condition Monitoring and Reliability Inspection of Materials and Parts,</li> <li>• Micro- and Nanosized Polymer Composite Materials</li> </ul>	<p><b>Career fields:</b></p> <ul style="list-style-type: none"> <li>• researcher in the field of development of novel materials for different applications;</li> <li>• technologist for manufacturing of materials with specified properties;</li> <li>• specialist for diagnostics of loaded structures and machinery;</li> <li>• teaching in the field of material science and computer simulation of materials.</li> </ul> <p>Types of organizations: research institutes and universities, laboratories in different engineering companies and plants.</p>
<p><b>Electronic Control and Diagnostic Systems in Engineering and Medicine</b></p> <p>The educational program "Electronics and Nanoelectronics" is aimed at training highly qualified specialists in the field of industrial electronics, electrophysical-technology, pulsed power engineering, high-current electronics and radiation technologies for materials processing, medical diagnosis, monitoring and treatment electronics.</p> <p><a href="http://iie.tpu.ru/en/3_master_EN.php">http://iie.tpu.ru/en/3_master_EN.php</a></p>	<p><b>Entrance requirements</b></p> <ul style="list-style-type: none"> <li>• 4 years Bachelor Degree Certificate.</li> <li>• Proof of the English language proficiency: certificate TOEFL (paper 500 and better; web 55 and better) or IELTS (5.5 and better), First Certificate in English (FCE) or entrance test result.</li> <li>• Sufficient result of Interdisciplinary exam.</li> </ul>	<ul style="list-style-type: none"> <li>• Field-Programmable Gate Arrays</li> <li>• Digital Signal Processing</li> <li>• Multi-bit Microcontrollers</li> <li>• Microprocessor Control Systems</li> </ul>	<p><b>Career fields and types of organizations:</b> the majority will enter business or industry in companies such as Siemens, Samsung, Schlumberger etc.</p>
<p><b>Networks and Communications</b></p>		<ul style="list-style-type: none"> <li>• Modern Issues of Science</li> </ul>	<p><b>Career opportunities</b></p>

<a href="http://iie.tpu.ru/en/3_master_Networks.php">http://iie.tpu.ru/en/3_master_Networks.php</a>		<ul style="list-style-type: none"> <li>• History and Methodology of Science</li> <li>• Intelligent systems</li> <li>• Optimization</li> <li>• Operating Systems</li> <li>• Computational Systems</li> <li>• Software Development</li> <li>• Decision Making</li> </ul>	<p>Science and research, industry (design and monitoring of Networks and Communications, development of network applications).</p>
<p><b><i>Nuclear Power Installations Operation</i></b>  The Master's program offers students an extensive and detailed education in the key areas pertaining to nuclear technology. The objective of the program is to prepare students for a career as engineers in atomic field that require specialized knowledge and skills. It is expected that graduates of the program will be able to work as engineers in industry, government or continue their education by pursuing a PhD degree. The program provides the depth and breadth of knowledge necessary for practicing professionals in Operation of Nuclear Power Plants. Under the guidance of a research supervisor and a multi-disciplinary team of scientific and engineering faculty, each student has the opportunity to engage in an in-depth study of particular problems, such as development of perspective material for nuclear fuel cycle, improving the operational characteristics of nuclear installations that emphasize theory and/or experimentation.</p> <p><a href="http://iie.tpu.ru/en/3_master_NP.php">http://iie.tpu.ru/en/3_master_NP.php</a></p>		<ul style="list-style-type: none"> <li>• Reactor Physics</li> <li>• Control and Safety of Nuclear Reactor</li> <li>• Nuclear Reactor Design Project</li> <li>• Design, Maintenance and Engineering of Nuclear Power Plants</li> </ul>	<p><b>Career fields and types of organizations:</b> NPP, Enterprisers of Nuclear fuel cycle (ROSATOM; EUROATOM, etc.)</p>
<p><b><i>Information and Measuring Equipment and Technologies of Nondestructive Testing</i></b>  The "Instrument Engineering" aimed at preparing highly qualified specialists in the design, creation and application of instruments and systems for receiving, recording and processing of information on the environment, biological and technical objects; able to ensure the development, production and operation, including maintenance and repair for nondestructive</p>		<ul style="list-style-type: none"> <li>• Mathematical Support of Measurement and Control;</li> <li>• Nondestructive Testing and Diagnostics;</li> <li>• Design of Microprocessor Measuring Instruments;</li> <li>• Construction of Measurement and Control Device.</li> </ul>	<p><b>Career fields and types of organizations:</b></p> <ul style="list-style-type: none"> <li>• Oil and gas and petrochemical industries;</li> <li>• Nuclear and thermal power;</li> <li>• Coal and mining industry;</li> <li>• Aviation and shipbuilding;</li> <li>• Rail and road transport</li> </ul>

<p>testing and technical diagnostics of the oil and gas industry, geophysical and space devices, instruments for measuring electrical and non-electrical quantities for all industries.</p> <p><a href="http://iie.tpu.ru/en/3_master_IE.php">http://iie.tpu.ru/en/3_master_IE.php</a></p>			<p>Graduates are ready immediately after take positions broad specialists, middle managers. Due to the wide profile training in 3-5 years, gaining experience, the graduate is able to take over as head of the mid-level (section chief, department, division, etc.).</p> <p><b>Examples of employment</b></p> <ul style="list-style-type: none"> <li>• Research, design and production organizations and enterprises</li> <li>• JSC "Information Satellite Systems named after Academician MF Reshetnev, Zheleznogorsk;</li> <li>• CJSC "Sibkabel";</li> <li>• CJSC "TOMZEL";</li> <li>• CJSC "Elesi";</li> <li>• JSC "Company Siam";</li> <li>• Medical and industrial company "Electropulse".</li> <li>• JSC "Tomskgazprom"</li> <li>• CJSC "Methanol";</li> <li>• Limited company "Technological Company Schlumberger"</li> </ul>
<p><b><i>Oil and Gas Field Development</i></b></p> <p>The need for the implementation of the master's program " Oil and Gas Field Development " caused by the need of international oil and gas companies for highly qualified specialists, who are able to integrate the entire complex available for the field when you create a three-dimensional numerical hydrodynamic models of deposits data, to determine the accuracy of the hydrocarbon reserves (as them - and economic risks), to choose the optimal field development system, to make the necessary project documentation. Already realized, for the rest it is</p>		<ul style="list-style-type: none"> <li>• Well Drilling Technology</li> <li>• Formation Evaluation</li> <li>• Reservoir Simulation</li> <li>• Reservoir Engineering</li> <li>• Oil and Gas Production Technology</li> <li>• Reservoir Stimulation</li> </ul>	<p><b>Career fields and types of organizations:</b></p> <p>Main industrial partners of Tomsk Polytechnic University, engaged in employment of graduates of the program are the largest organization of oil and gas complex of Russia - JSC "Rosneft", JSC "Gazpromneft", JSC "Gazprom" and its subsidiaries, as well as research and design institutes the oil and gas industry. Among the</p>

<p>for the leading oil companies in the world the need for such specialists - the prospect of the next few years.  <a href="http://iie.tpu.ru/en/3_master_PE_career.php">http://iie.tpu.ru/en/3_master_PE_career.php</a></p>			<p>foreign partners should be noted, companies such as Schlumberger, Baker Hughes.</p>
<p><b>Biomedical Sciences and Engineering</b>  The network Master's Degree Program «Biomedical Sciences and Engineering» is aimed at training highly qualified specialists in the field of systems and complexes of medical and biological and environmental purposes, automated processing system of specific information, biotechnical system supporting human life and other biological objects.  <a href="http://iie.tpu.ru/en/3_master_BSE.php">http://iie.tpu.ru/en/3_master_BSE.php</a></p>		<ul style="list-style-type: none"> <li>• Philosophic and Methodologic Issues of Science and Engineering</li> <li>• Foreign Language (Russian)</li> <li>• Mathematical Modeling of Biological Processes and Systems</li> <li>• Biocompatible Materials</li> <li>• Introduction to Biophysical System</li> <li>• System Analysis</li> </ul>	<p><b>Career fields and types of organizations:</b> the majority will enter business or industry in companies such as Siemens, Samsung, Beckman Coulter, Shanghai Medical Equipment Works Co.Ltd and many more.</p>