



Silesian University of Technology

SILESIA UNIVERSITY OF TECHNOLOGY

Gliwice, Poland
2014





Silesian University of Technology

UNIVERSITY TODAY

13 faculties (schools) covering all engineering disciplines

**Enrolment nearly 30 thousand
49 courses 200 specializations**

**1800 academic staff,
160 full professors
3500 employees**

46% of budget from research

Forbes Diamonds for worth accretion

Top managers - third University nationwide

**Close collaboration with industry,
energy sector, IT, electrical, material
bio - engineering**





FACULTIES

- Applied Mathematics
- Architecture
- Automatic Control, Electronics and Computer Science
- Biomedical Engineering
- Chemistry
- Civil Engineering
- Electrical Engineering
- Energy and Environmental Engineering
- Materials Engineering and Metallurgy
- Mechanical Engineering
- Mining and Geology
- Organization and Management
- Transport
- College of Foreign Languages
- Institute of Physics – Centre for Science and Education



Silesian University of Technology gives an opportunity to develop in any field



RESEARCH CENTRES

- **BIOTECHNOLOGY**
- **BIOMEDICAL ENGINEERING**
- **CIVIL AVIATION STAFF TRAINING FOR CENTRAL AND EASTERN EUROPE**
- **GEOMETRY AND ENGINEERING GRAPHICS**
- **EDUCATION IN MECHATRONICS**
- **STUDENTS CAREER**
- **ADVANCED DEFENSE AND SAFETY TECHNOLOGIES**
- **PROSUMENT ENERGY**



International Research

- **Framework Programs 5,6,7**
- **Research Fund for Coal and Steel**
- **COST – European Cooperation in the Field of Scientific and Technical Knowledge**
- **EUREKA – coordination of innovation efforts of governments, research institutes and commercial companies**
- **KIC – Knowledge and Innovation Community Collocation center for clean coal technologies**
- **Other international schemes and bilateral projects**





Research: strategic areas

- Information & Communication Technologies
- Biomedical Engineering
- Energy & Environment





Research: major technologies

- Information & C. Technology
- Biotechnology & Biomedical Engineering
- High-tech Component Materials
- Energy & Environment (Clean Coal Technology)
- Transport (Civil Aviation)
- Nanotechnology
- Mechatronics





Research: ICT technologies

- Multimedia Transmission Services in the New Generation Internet
- E- learning, Web-Based Education
- Digital Signal Processing in Telecommunication
- Virtual Reality (3D), Computer Graphics
- Processing of Biomedical Signals, Speech & Image Recognition
- Nanosystem Design
- Bioinformatics in Genomics
- Artificial Intelligence in CAD





Research: Biomedical engineering

- Informatics and Medical Apparatus
- Computer Aided Micro-Surgery and Diagnostics
- Biomedical Information Processing
- Biomedical Modelling and Graphics
- Remote Cardiologic Diagnostics
- Biomaterials and Medical Apparatus Engineering,
- Biomechatronics
- Biomechanics, Materials, Modelling
- Virtual Reality Technologies in Biomechatronics
- Biosensors and Biomedical Signals Processing





Research: Energy and environment

- Clean Coal Technologies
- CO₂ capture and storage
- Fluid Technologies in E&E
- Prosumer Energy Technologies
- Biomass Based Technologies
- Energy Polygeneration/Cogeneration Technologies
- Advanced Combustion Technologies, Oxygen
Enhanced Combustion





Energy & Biomedical Engineering: Materials

Laboratories in the Institute of Engineering Materials and Biomaterials:

- Laboratory of Computational Engineering of Materials
- Workroom for Computer-aided Materials Processes Management
- Workroom for Computer-aided Materials Processes Design
- Workroom for Multimedia Techniques
- Workroom for Computer Networks and Internet Tools
- Workroom for Computer-aided Machine Material Design – Presidential Workroom
- Workroom for Artificial Intelligence Methods in Materials Engineering
- Methodological Room for Computer Assistance of BSc Theses
- Workroom for Computer-aided Stereological Examination
- Workroom for Computational Materials Science Examination





Energy & Biomedical Engineering: Materials

- Workroom for Materials Processing Technology in Dental Prosthetics
- Workroom of Technology of Formation of Dental Prosthesis
- Workroom of Computer-aided Materials Processing Design
- Workroom of Integrated Materials Processing Bioengineering and Dental Prosthetics
- Workroom of High-Resolution Transmission Electron Microscopy
- Workroom of High Resolution Scanning Electron Microscopy
- Workroom of X-Ray Structural and Fluorescence Analysis
- Workroom of Atomic Force Microscopy and Spectral Analysis
- Methodological Room for Computer-aided Engineering Works
- Workroom of Specimen Preparation for Light and Scanning Microscopy
- Workroom of Light and Confocal Microscopy
- Workroom of Transmission and Electron Microscopy



Energy & Biomedical Engineering: Materials

Laboratory of Engineering Materials Processing

- Workroom for Technologies of Polymer Materials
- Workroom for Polymer Materials Examination
- Workroom for Metal Plastic Forming
- Workroom of Powder Metallurgy

Scientific and Didactic Laboratory of Nanotechnology and Materials Technologies

- Workroom of Materials, Composites and Polymer Nanocomposites Processing
- Workroom of Metal Materials, Ceramic and Photovoltaic Laser Surface Treatment
- Workroom of Powder Metallurgy and Ceramic Materials
- Workroom of Composite and Nanostructural Materials Technology by the Use of Intensive Plastic Deformation Methods
- Workroom of Metal Alloys and Materials Heat Treatment by the Use of Semiconductors



Energy & Biomedical Engineering: Materials

Scientific and Didactic Laboratory of Nanotechnology and Materials Technologies

- Workroom of Metal Alloys Plastic Deformation
- Workroom of Computational Materials Science
- Workroom of Computer Assistance in Nanotechnology and Materials Technology
- Workroom of Equipment and Materials Technologies Design by the Use of Virtual Reality Methods
- Workroom of Technological Processes Visualisation by the Use of Virtual Reality Methods
- Workroom of Nanostructural Coatings Surface Engineering
- Workroom of Amorphous and Nanocrystalline Materials Manufacturing and Metal, Ceramic and Gradient Materials Laser Constitution
- Workroom of Nanotubes and Nanomaterials
- Workroom of Materialographic Control and Manufacturing Quality Management



Virtual Flying Laboratory

It is an exceptional interdisciplinary laboratory, where cutting-edge technologies from aviation are combined with the newest trends in ICT, in particular, virtual reality and visualization, and with satellite navigation systems GNSS. VFL is co-financed by European Union from the European Regional Development Fund within the Project considered as a winner among more than 100 others in Silesia, the most industrial region in Poland. It is equipped with 14 professional flight simulators, including full-size cockpit simulators: two cockpit simulators: ELITE Evolution S812 and ELITE Evolution S923 equipped with 3-channel visualization technology, are compliant with JAR-STD 3A (Evolution S923 is additionally capable for MCC); two others, manufactured by FLYIT (FAA approved: PHS for helicopter and PAS for aircraft), are installed in mobile class-room platforms with heating and air-condition. Due to mobility, it is possible to move them to distant places where research and/or demonstration field experiments are planned.

The instrumentation includes a full IFR panel with all engine and fuel gauges, engine/rotor RPM, AH, ALT, ROC, T&B, HSI, VOR, ADF, and Transponder.



Cooperation with industry

RESEARCH FOR INDUSTRY

TOTAL NUMBER OF PROJECTS FINANCED DIRECTLY FROM INDUSTRY:

2011- 609

2012- 682

TOTAL FUNDING:

2011- €11.5M

2012 - €11.7M





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