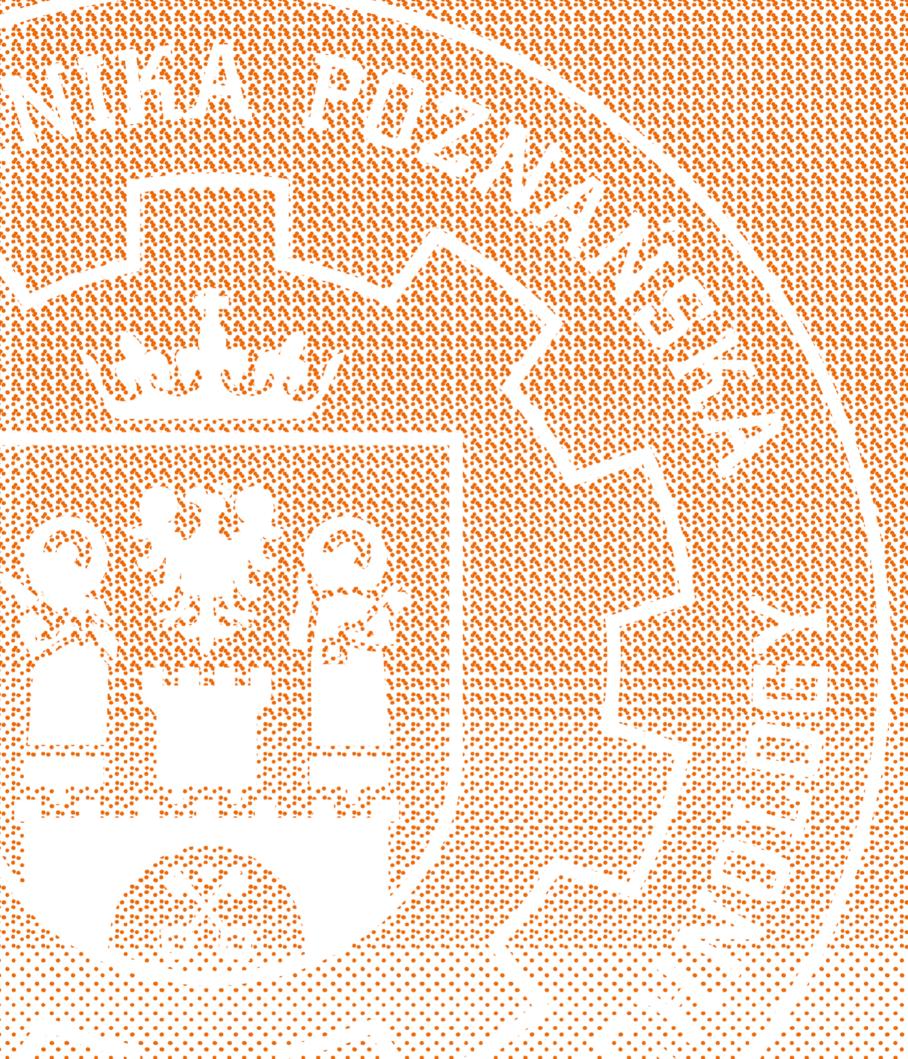


## FACULTY OF ARCHITECTURE

Information on the selected test equipment at the Faculty of Architecture, Poznan University of Technology





The Faculty of Architecture at Poznań University of Technology has great potential as it boasts not only its highly qualified academic staff but also well-equipped laboratories.

The assumptions of the Course in Architecture promote high quality education with a focus on flexibility and latest trends in tune with ever-changing expectations. Our students' education should correspond with job market requirements and contemporary scientific targets; therefore, it is our intention to ensure the best possible educational environment and future success. To achieve this, we use and improve current interdisciplinary scientific directions in research carried out at the Faculty of Architecture. We are continuously working on the development of our academic potential in three organizational units: at the Department of Drawing, Painting, Sculpture and Visual Arts, the Institute of Architecture and Spatial Planning, and the Institute of Architecture, Urban Planning and Protection of Heritage.

One of our targets in term 2016/2020 is to develop cooperation with other scientific and academic units with the same educational profile, both at University and outside it. We are also working on the implementary character of our scientific research, both in technical and artistic fields. All these actions are to lead to synergy of theoretical and practical knowledge of the academic staff of the Faculty. We also promote cooperation with students' scientific clubs at PUT as part of scientific programmes of the Faculty, and we notice a steady increase in the number of publications, implementations and patent applications, which positively influences parametric assessment of the Faculty.

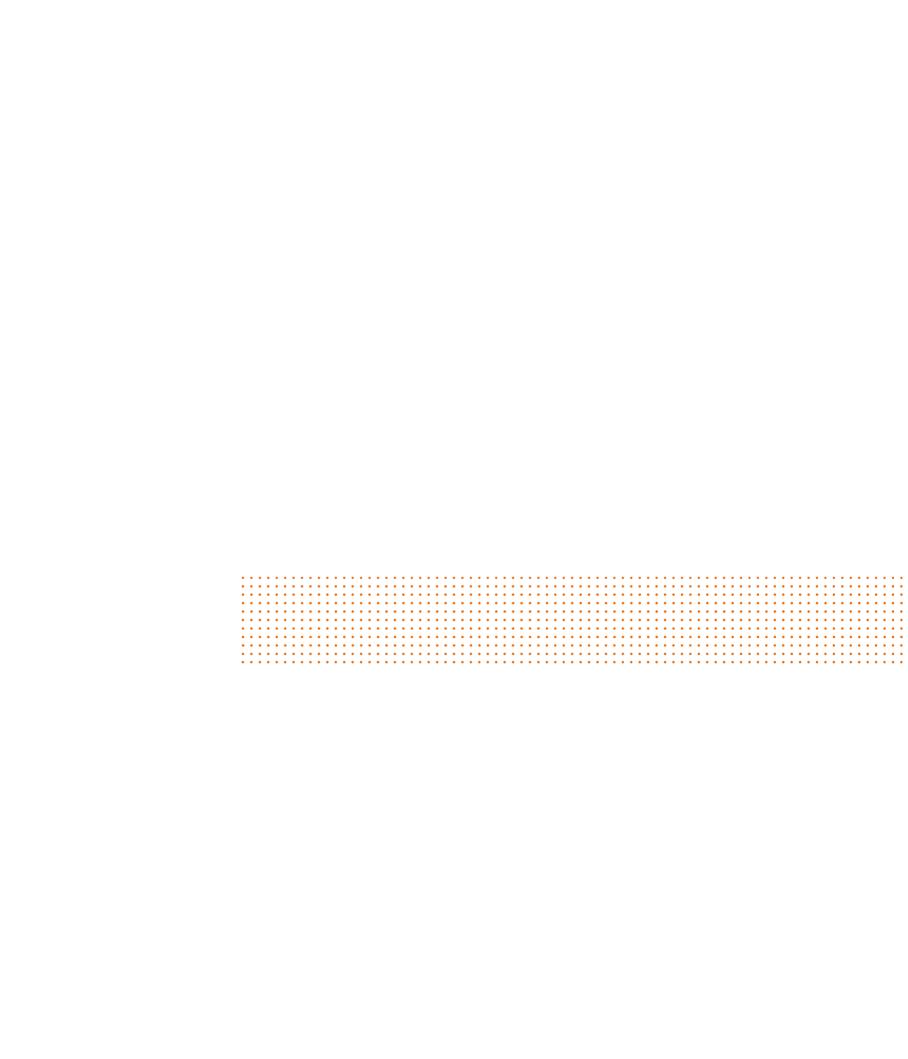
As our policy is to educate architects by ensuring them access to knowledge and the highest educational methods, we are constantly improving our laboratories, equipment and other teaching aids.

The following prospectus, which presents laboratories at our Faculty, is also an invitation to cooperate with third parties.

Associate Professor Ewa Pruszewicz–Sipińska, DSc Dean of the Faculty of Architecture

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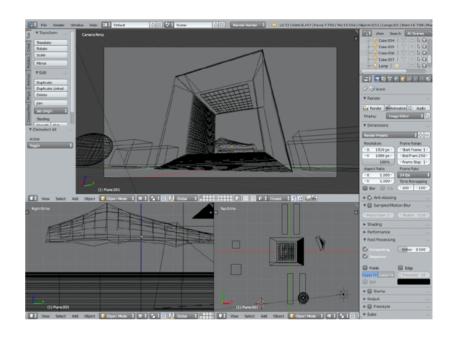


# Laboratory of computer-aided architectural design (CAAD)

#### DESCRIPTION:

#### The laboratory facilitates:

- 3D modelling of architectural buildings by means of software such as BLENDER, 3DSmax, Solidworks, SketchUp;
- preparation of technical 3D and 2D drawings (Autocad);
- preparation of architectural and 3D visualizations 3D (BLENDER, 3DMax, Solidworks, SketchUp);
- lighting design (Dialux, Relux,3DMax); design and modelling of 3D objects (Solidworks); graphic design DTP (Corel Draw, Corel PhotoPaint, Photoshop).



The CADD laboratory, 3D modelling, BLENDER programme, a student's work

#### KEYWORDS

- CAAD
- architectural design support

#### APPLICATION:

- Implementation of new methods of architectural creation in a design at the level of conceptual and technical solutions by means of systems supporting CAAD,
- support of creation of multi-optional architectural and urban planning concepts.

# Laboratory of CAAD platforms



#### **DESCRIPTION:**

 The laboratory facilitates on-line design on the Internet and Intranet as environments for dispersed design, and on design platforms dedicated to urban planning, architecture and design.

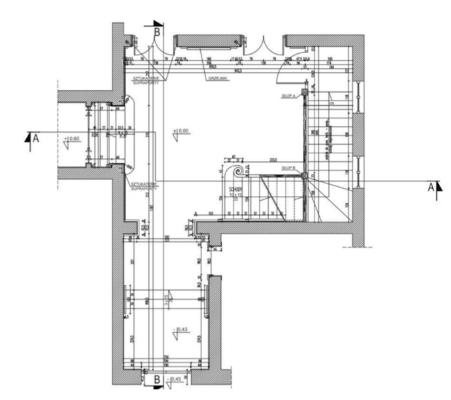
Projekt zakładu przemysłowego, autor: inż. arch. Magdalena Frąckowiak

#### APPLICATION:

 Analysis of effectiveness of design systems, quality assessment of design systems. Support in creation of multi-optional architectural and urban planning concepts and design projects for various purposes.

- · CAAD
- · dispersed design
- · design systems

# Laboratory of inventory and conservation of cultural property



#### DESCRIPTION:

• The laboratory uses equipment for inventories of buildings and monuments of architectural heritage, for digitalization of documentation, and for preparation of conservation concepts. The equipment includes a 3D Zortrax M200 printer, scanners, specialized cameras, a wood hygrometer, rangefinders (Leica Disto A8, A5, A 3, Fluke, Bosch), graphic software for 3D models, an inventory archive including data from the 1960s, 1970s and 1980s, and an archive of projects done by traditional methods.

A fragment of an inventory of the Rectorate of Poznań University of Technology, address: Plac Marii Skłodowskiej 5, inventory 2011, supervisor: Prof. T. Bardzińska-Bonenberg, PhD, by: S. Menzel, P. Michalak, J. Walczak, S. Wędrychowicz, M. Zajda

#### KEYWORDS

- inventory for conservation of cultural property
- conservation
- · state of preservation
- preservation of cultural heritage

#### APPLICATION:

Measurements of various (including large) buildings, traditional inventories of fragments of heritage value. Services: architectural inventories, data analysis of structure of historic buildings, stratigraphic investigations, assessment of wood moisture content, technical condition assessment of plastered surfaces insulated by modern methods.

# Laboratory of dendrology and greenery architecture

#### DESCRIPTION:

 The laboratory equipment is useful in studying taxonomy, anatomy, morphology, and physiology of plants with a focus on identification and use in architectural and urban planning design.

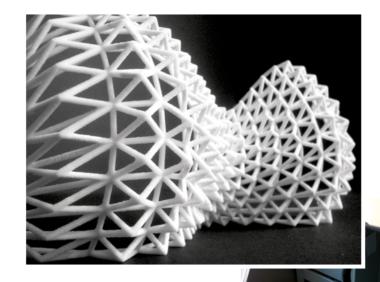


#### APPLICATION:

 Services: tree and vegetation inventories in a selected developed area, preparation of multi-optional concepts and greenery design projects.

- greenery design
- · dendrology
- · landscape architecture

## Laboratory of CAx Design



A print of sophisticated 3D forms on a 3D printer

#### APPLICATION:

 The laboratory renders it possible to use the latest technologies of architectural and urban planning project management, as well as innovative methods of modelling architectural and urban planning environment based on Cax - RP useful in global market conditions.

### DESCRIPTION:

equipment and software for modelling of architectural and urban planning environment based on CAx - RP (Rapid Prototyping) facilitate creation and management of innovative architectural solutions. They include: Virtual Reality Modeling (VRM), architecture of cyberspace, technologies CAx – RP (Rapid Prototyping), Human-Computer Interaction (HCI), and Computer Supported Collaborative Work (CSCW). The laboratory houses a 3D Z Corporation printer (Zprint 350 model) with build volume 203 x 254 x 203 mm (300 x 450 dpi resolution and layer thickness from 0.089 to 0.102 mm). The printer software is compatible with the majority of popular 3D formats (STL, 3DS, DWG and others). The powder system technology enables printing of very complicated 3D forms much faster than other technologies available on the market.

- CAx RP (Rapid Prototyping)
- VRM (Virtual Reality Modeling)
- HCI (Human-Computer Interaction)



# Laboratory of lighting engineering

Lighting installations and mapping of a building; work by students from the Science Club ,Illumination', supervised by Hanna Michalak, PhD



 The laboratory equipment includes various types of lighting used for illumination of buildings and software for lighting design (Dialux, Relux, 3DMax).

#### APPLICATION:

The laboratory is used to measure temperature, colour and volume of illumination, to design lighting, to construct lighting installations, and for mapping.

- analysis and design of lighting
- simulations of illuminations of buildings
- · lighting installations
- mapping

# Laboratory of architectural acoustics

#### DESCRIPTION:

The laboratory renders it possible to carry out acoustic investigations of buildings by means of measuring equipment and the DIRAC programme at the design stage, or investigations of existing buildings by means of the ODEON programme.

#### KEYWORDS

- · interior acoustics
- · acoustic modelling
- DIRAC
- ODEON



An omnidirectional sound source used in acoustic investigations

#### APPLICATION:

- Investigations of acoustic parameters in interiors (eg. churches, opera houses, concert halls, and auditoriums) measurements of: reverberation time RT, early decay time EDT, clarity indexes C50 and C80, center time Ts, speech intelligibility STI and RASTI;
- Computer simulation of acoustic parameters of interiors at the design stage;
- · Acoustic treatment of interiors with acoustic defects;
- Acoustic design of interiors choice of finishes and their layout in the interior.



# Laboratory of fashion, design and textile technologies

The laboratory of fashion and design



A fashion show: Architecture of fashion, supervised by Hanna Michalak, PhD, Arena Design, MTP, Poznań, 2012

#### DESCRIPTION:

• The laboratory equipment (sewing machines: a semi-professional Texi premium ex., three Janome 393 machines and a Łucznik Amelia II 2005) facilitates creation of original design patterns and arrangements for innovative technologies, modelling and prototyping utility models by means of interactive media, innovative design based on analogies of stylistic tendencies in architecture, emergent forms and their influence on fashion design.

#### APPLICATION:

 The laboratory research focuses on modelling, prototyping, technological processing and creation of an original industrial design.

- fashion design
- fashion
- design
- · textile technologies

### Laboratory of photography

#### DESCRIPTION:

The laboratory is used to document model simulations as well as artistic and promotional projects. It is also a place where artistic and utilitarian photography projects are done. Research carried out here focuses on presentation of objects and space, creative use of photography as a medium, and on documentation and promotion of student projects. The laboratory is equipped with a Canon 60D camera, lenses Canon 50mm f/1,4, Canon 24-105L f/4.0 IS USM, Sigma10-20 f/3,5 HSM, Quantuum lighting with a total power output about 1000Ws, and a darkroom.



A portrait photography session in the laboratory of photography

#### APPLICATION:

- Portrait photography, in or outside the studio (with studio lighting)
- Advertising, commercial and documentary photography
- Fine art reproduction photography
- Architectural photography
- Interior design photography
- Post-production in photography

- portrait photography
- advertising photography
- · commercial photography
- · documentary photography

## Laboratory of artistic ceramics

#### DESCRIPTION:

- The laboratory houses a one cubic meter TS-THERM ceramic kiln with a control panel for the programmable controller PCD 33 and a temperature range up to 1250 °C.
- The laboratory equipment includes modelling tools and a wide selection of ceramic glazes for sophisticated finishing touches.



A fragment of a BA project entitled ,Texture of Light', by Małgorzata Jackowska; technique: ceramics

#### APPLICATION:

The laboratory facilitates creation of artistic and utilitarian ceramic projects including:

- · spatial, semi-spatial and two-dimensional compositions
- elements for newly designed buildings, realized in various ceramic techniques
- utilitarian design

- · artistic ceramics
- · utilitarian design
- · architectural ceramic detail

## **Laboratory of Sculpture**



Clay modelling in the laboratory of sculpture

#### KEYWORDS

- · sculpture
- architectural detail
- modelling sculpture forms
- reconstructions
- · monument, statue, medal

#### DESCRIPTION:

 The laboratory equipment (sculptor's tables and a variety of specialized tools) facilitates comprehensive realization of projects and models of unique architectural and sculpture elements, realization of ceramic models, artistic clay modelling by hand, and negative and positive casting. It is also possible to carry out reconstructions of sculptures: figurative sculptures, stucco prototypes, mosaics, and polychromy.

#### APPLICATION:

- The laboratory promotes interdisciplinary cooperation in design and realization of architectural elements, design and small architecture, cast models of commemorative medals, plaques, statues and others.
- The use of the latest technologies in creation of experimental spatial forms renders it possible to design both monuments and their surroundings and other sculpture forms (including milestone sculptures).
- The laboratory can also be used to organize workshops in sculpture, tutorials in sculpture techniques, and lectures.

## Laboratory of painting and drawing



A replica painting – still life, by Lidia Sieradzka

#### APPLICATION:

- Creation of an artistic message using various painting and drawing techniques. Development of creative imagination and search for original means of artistic statement.
- The laboratory promotes creative interpretation of architectural spaces and urban planning concepts using painting and drawing techniques.

- · painting
- · drawing
- · artistic creation
- · creative imagination

## Laboratory

## of wall painting

#### DESCRIPTION:

- The laboratory equipment includes special boards for practising traditional mineral painting techniques, and necessary materials and pigments.
- The expertise of the academic staff and the available equipment promote realization of wall painting projects (both inside and outside) in both original fresco and acrylic techniques (in murals).

#### APPLICATION:

 Creation of design concepts and realization of large-scale wall painting designs.



A design of a mural entitled ,Children' in Fabryczna Street, Poznań, by Agata Hahn, supervised by Przemysław Tomczak, PhD in Fine Arts

- wall painting
- mural
- fresco
- · architectural decoration

### Laboratory

## of stained glass studies and techniques

#### DESCRIPTION:

• The well-equipped laboratory and the academic staff assist in design and realization of flat and spatial stained glass panels in lead and in Tiffany style with elements of painting and patina, gold and silver plating (matte and glossy), realization of paintings in traditional artistic techniques and replicas of paintings. The specialized laboratory equipment includes glass grinders, foiling machines, soldering tools, knives, grinding stones, various types of glass and small professional tools.



A stained glass project inspired by symbols of Poznań University of Technology. Team work by: Anna Pawłowicz, Monika Skrzypczyk, Katarzyna Stawicka, Patrycja Szamara, Katarzyna Zimna.

#### APPLICATION:

 Design and realization of stained glass prototypes as architectural and interior design elements; canvas painting, painting on wooden panels in various gold plating techniques.

- flat stained glass
- · 3D stained glass
- gold plating
- traditional painting techniques

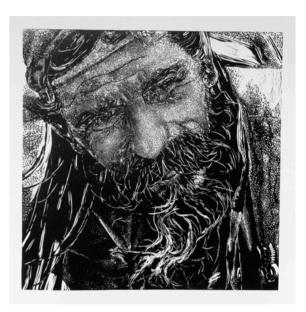
# Laboratory of graphic techniques and design

#### DESCRIPTION:

 Different types of functional graphics. The laboratory equipment (printing press for relief printing, rotary printing press for intaglio printing, screen printing table including a space for T-shirt screen printing) facilitates design and realization of graphic techniques such as linocut, wood engraving, drypoint and other metal engraving techniques, and screen printing.

#### APPLICATION:

- Realization of artistic graphics in relief, intaglio and planographic printing techniques,
- identity design projects (logo, business cards, envelopes, banners and boards, posters, notices, leaflets, fliers and brochures),
- graphic design for the publishing industry,
- illustrations,
- · graphic design for packaging and labels.



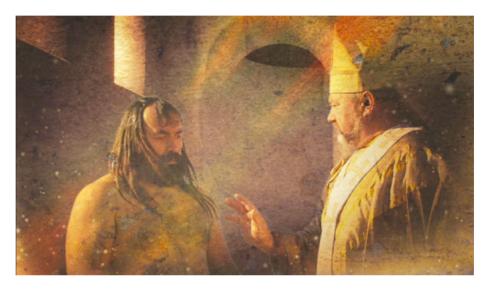
A fragment of a BA project entitled ,Freedom is here', by Magdalena Kałużna; technique: linocut

- · graphic techniques
- · graphic design
- poster
- · visual information
- graphic design for the publishing industry

## Laboratory of multimedia and visual arts

#### DESCRIPTION:

The laboratory facilitates creation of stop motion animations using various techniques (such as a traditional drawing technique, painting, sculpture, vector and 3D techniques, and mixed techniques), film editing, special effects (in Adobe Premiere, Adobe After Effects), design of interactive multimedia applications (Adobe Flash) and 3D modelling (Blender).



A frame from a film entitled ,Wyspa Władców' (,The Island of Monarchs'), directed by Zdzisław Cozac. Virtual 3D reconstructions of objects – project supervised by B. Siewczyński, DSc (3D modelling, Blender programme), KN FANTOMATYKA WAPP. The film received awards for best animations and best special effects: Award for Best Animation & Effects - the Archaeology Channel, International Film and Video Festival, 2014, the Shedd Institute, Eugene, Oregon, USA, and ARKEOLAN Award at 13th International Archaeological Film Festival in Irun, Spain.

#### APPLICATION:

 The laboratory software facilitates production of animated short films according to basic visual, narrative and editing principles; it promotes practical use of a wide selection of animation techniques and enables design of interactive multimedia applications for presentations, portfolios or websites. The available 3D graphic software is used for realizations of 3D models and for further editing.

- multimedia
- visual arts
- multimedia content
- · special effects

#### Contact

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POZNAN UNIVERSITY OF TECHNOLOGY