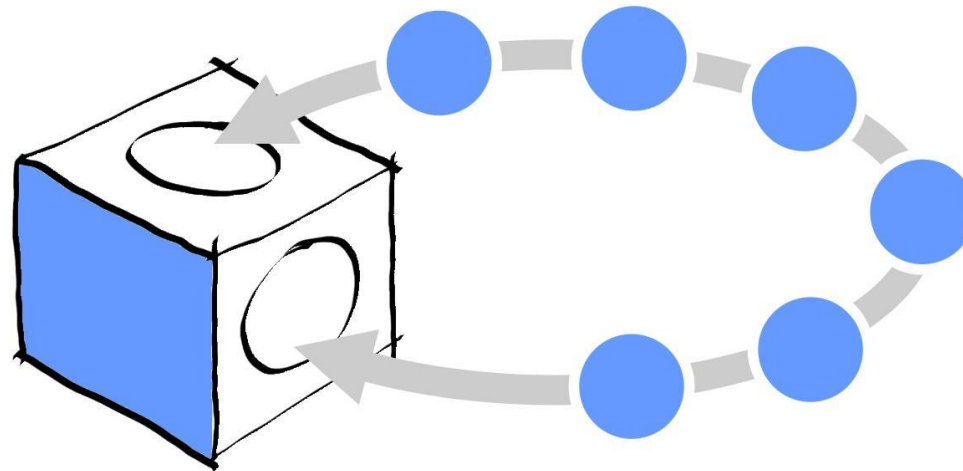


# PRELIMINARY PROGRAMME

International & Interdisciplinary CEEPUS Summer School

18-27.09.2017

## INTERDISCIPLINARY APPROACH IN SHAPING SUSTAINABLE PUBLIC SPACE SUMMER SCHOOL, Gliwice, Poland, 18-27.09.2017



*come and work with over 60 PhD students from various EU countries  
work with colleagues from 6 different specialities  
experiment and enjoy Silesian University of Technology and more  
try CEEPUS Central European Exchange Program for University Studies*



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International & Interdisciplinary CEEPUS Summer School

18-27.09.2017

## **INTERDISCIPLINARY APPROACH IN SHAPING SUSTAINABLE PUBLIC SPACE**

**Venue:** Silesian University of Technology, Gliwice, Poland

**Registration:** 10.05.2017 - deadline for final submission: [www.ceepus.info](http://www.ceepus.info). Decides the order of submissions.

**Time:** 18-27. 09.2017

**Eligible for:** Foreign PhD students of CEEPUS countries (Albania, Austria, Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, Hungary, Macedonia, Moldova, Montenegro, Romania, Serbia, Slovakia, Slovenia, Kosovo\*)

**Language:** english

**Credits:** 15 ECTS points, diploma for attendance

**CEEPUS grant:** 1350 PLN sponsored by CEEPUS programme; *Travel cost and private expenses not included. Since there is no transfer of funds, CEEPUS III scholarships shall be paid by the host country, with the exception of travel expenses, which shall be paid by the country of origin where applicable.*

**School fee:** est. 1000 PLN

**Budget includes:** accommodation, lunch breaks, common excursions, welcome reception

**Brief:** one design objective will be led in 6 interdisciplinary teams from different disciplines: architecture&urban design, electrical engineering, organization and management, mechanical Engineering, crisis management. Target: interdisciplinary project in 10 days

**Subject:** interventions and design ideas for campus of the Silesian University of Technology

**Organisers:** Silesian University of Technology

**Team leaders:** Faculty of Architecture [A], Faculty of Mechanical Engineering [ME], Faculty of Organization and Management [OM] , Faculty of Electrical Engineering [EE], Faculty of Mining and Geology [MG], Faculty of Civil Engineering [SE]

**Contact:** [ceepuspolsl@gmail.com](mailto:ceepuspolsl@gmail.com) please contact individually by field of interest [A] tomasz.bradecki@polsl.pl, [ME] jan.jezierski@polsl.pl, [OM] joanna.bartnicka@polsl.pl, [EE] mariusz.stepien@polsl.pl, [MG] katarzyna.tobor@polsl.pl, [SE] marcin.gorski@polsl.pl

**website:** <http://www.polsl.pl/Jednostki/CZP/CZP5/Strony/CEEPUS.aspx> , **facebook:** <https://www.facebook.com/InternationalCeepusSummerSchoolSUT>

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	18.09 Monday	19.09 Tuesday	20.09 Wednesday	21.09 Thursday	22.09 Friday	23.09 Saturday	24.09 Sunday	25.09 Monday	26.09 Tuesday	27.09 Wednesday	
8.30-9.30	<b>Individual Accomodation</b>	Brief and meeting time [A]	<b>Excursion</b>	Coordination and ideas exchange [A]	<b>Excursion</b>	Coordination and ideas exchange [A]	<b>Free Time Individual excursion</b>	Coordination and ideas exchange [A]	Coordination and ideas exchange [A]	Common presentation test [A]	
9.30-10.45		Common lecture [A]		Common lecture [A]		Common lecture [A]		Common lecture [A]	Common lecture [A]	Common workshops	<b>Final Presentation</b>
11.00-13.00	<b>Formal registration</b>	Group lecture or workshops [X]		Group lecture or workshops [X]		Group lecture or workshops [X]		Group lecture or workshops [X]	Group lecture or workshops [X]	Group lecture or workshops [X]	<b>Discussion</b>
13.15-14.45	<b>Registration</b>	Lunch		Lunch		Lunch		Lunch	Lunch	Lunch	Dinner
15.30-18.00	Common lecture: introduction; brief for project [A]	Laboratory or workshops [X]		Laboratory or workshops [X]		Laboratory or workshops [X]		Laboratory or workshops [X]	Laboratory or workshops [X]	Laboratory or workshops [X]	Common presentation test
19.00	<b>Social Evening welcome party [P]</b>			<b>Informal group work</b>				<b>Informal group work</b>		<b>Informal group work</b>	

[A] lecture room no.200 , Faculty of Mining and Geology, Akademicka 2, Gliwice

[X] see and check groups programme depending on team's profile: location vary on time and lecture/workshops type

[P] Party place *to be specified later* ; accommodation proposal: Student Guest house at the University Campus

**Excursions:** Auschwitz Birkenau, Guido Coal mine in Zabrze, individual trip suggestions: Cracov

## Project description

The aim of the project is the implementation of six summer schools, each resolving around a different subject area, on various faculties of the Silesian University of Technology. Those schools will be partially independent, but – at the same time – they will be connected as parts of one bigger platform, through joint lectures and the implementation of one interdisciplinary project. Thus, participants will not only be able to deepen the knowledge within their area of expertise, but will also have a chance to participate in joint lectures, presenting basic information, technologies and methods used in different areas of engineering.

The main purpose of the summer school platform at the Silesian University of Technology is not only the transfer of knowledge and substantive competence, but also the interdisciplinary integration and the development of teamwork within the interdisciplinary research teams. During the implementation of a joint project, it is necessary to have knowledge from various areas: management of critical infrastructure, security engineering and ergonomics, the use of innovative construction materials and building techniques in the creation of urban space, urban-architectural design, control of mechanic systems and widely understood engineering design. A few mixed teams will be created, all of which will include representatives from all of the planned summer schools.

The task of the teams will be the joint development of comprehensive solutions for the selected urban space (the University Campus), including innovative security and accessibility solutions, taking into account technical, economic and social requirements (e.g. for people with disabilities), serving the objectives of the idea of sustainable development. Therefore, it will be a typical example of the PBL method (Problem Based Learning).

The additional advantage of the summer schools platform will be the element of competition between teams trying to develop the best idea. This innovative form of integrated summer schools will show the possibilities of bridging the gap between – seemingly distant – areas of technical sciences. It will also teach the participants how to implement future joint projects within the interdisciplinary research teams.



## Mechanical Engineering [ME]

**Field of Interest:** mechanical engineering

**Summer school title:**

*‘Intelligent functional materials of the future’*

**Short description:** The idea of this summer school is to teach the participants about the most modern achievements in the functional materials for dedicated applications, in the cases of architectural purposes, civil engineering and the so-called special applications inside city infrastructure design. The students will learn about modern metallic and non-metallic materials, metal matrix composites, ceramics and plastics, nanomaterials based on carbon nanotubes and, graphene. These technologies of engineering material properties improving with use of the sophisticated heat and surface treatment for example with use of lasers and the ultrathin coatings production. Additionally, they will learn about photovoltaics and its use in modern engineering. Moreover, they will learn how to examine engineering material properties and their design methodology for applications. The school is planned in the form of lectures and laboratory exercises (1:1 ratio) with use of modern and very often unique research equipment of the Faculty of Mechanical Engineering.

**Supervisor:** Associate Professor Jan Jezierski, DSc., Ph.D., Vice Dean for General Affairs

**Organizer:** Faculty of Mechanical Engineering

**Contact:** jan.jezierski@polsl.pl

### Detailed programme:

<b>ME1.</b>	Composites, functional and gradient materials 4h lectures + 4h lab (including 2h lecture for all participants entitled: ‘Functional materials of the future’)
<b>ME2.</b>	The rules of computer-aided design of the engineering materials 4h lectures + 4h lab
<b>ME3.</b>	Photovoltaic materials and technologies 4h lectures + 4h lab
<b>ME4.</b>	Nanomaterials and their use in the engineering applications 4h lectures + 4h lab
<b>ME5.</b>	The examination of engineering materials properties 2h lectures + 6h lab
<b>ME6.</b>	Surface coatings engineering 4h lectures + 4h lab

### **Proposed number of the summer school students:**

10 + 3 (optionally) – all Ph.D. students

### **Faculty capability:**

The project will be carried out by teachers of the Faculty: Institute of Engineering Materials, and Biomaterials, Department of Welding Engineering and Department of Foundry, Engineering. All have wide experience and English language skills according to University standards.

## Architecture [A]

**Field of Interest:** architecture and urbanism

**Summer school title:**

*'Design for sustainable public space'*

**Short description:** Participants will be introduced with contemporary methods of public space analysis. Design thinking method will be a subject of lectures and work as well as urban analysis by work models and work drawing. Since hands on drawings, and hands on models play major role in conceptualising possible solutions - these way of work will be developed. Interdisciplinary ideas need to be drawn or modeled or visualised fast on site

**Supervisor:** Tomasz Bradecki., Ph.D., arch.

**Organizer:** Faculty of Architecture

**Contact:** tomasz.bradecki@polsl.pl; 0048 793090078

### Detailed programme:

- |            |   |
|------------|---|
| <b>A1.</b> | Design for sustainable public spaces lecture: The case study of Akademicka street in Gliwice and sightseeing        |
| <b>A2.</b> | Design thinking method as a tool for getting better project objectives and workshops                                |
| <b>A3.</b> | Revitalisation of brownfield sides: lecture case study of Nowe Gliwice: lecture and sightseeing                     |
| <b>A4.</b> | Transforming heritage areas; role of planning policies in shaping the contemporary city: lecture, sightseeing       |
| <b>A5.</b> | Design a urban furniture for public spaces: practical test with 3d cutter and or visit in a urban furniture factory |
| <b>A6.</b> | Application of contemporary materials in architecture and urban furniture lecture with civil engineering RB         |

**Proposed number of the summer school students:**

10 + 3 (optionally) – all Ph.D. students

**Faculty capability:**

The project will be carried out by teachers of the Faculty of Architecture

## Organization and Management [OM]

**Field of Interest:** Ergonomics, Human Factors Engineering, Design for All

**Summer school title:**

*'Human Factors Engineering and Ergonomics, acronym ErgoSchool'*

**Short description:** The objective of ErgoSchool is to obtain specialized and useful knowledge as well as practical skills in the field of Human Centered Design (HCD). HCD is a creative approach to problem solving allowing the adjustment of life or work environment to human needs and individual predispositions. Particularly, these needs should be included during designing both technical means and utility spaces and should cover specific human psychophysical characteristics, also specific characteristics like different types of disabilities.

ErgoSchool is the opportunity to learn how to conduct specialist ergonomic diagnosis and audit of accessibility, how to use research equipment and how to make professional projects. Additionally the skills will be obtained of what kind of methods and how their use for subjective and efficiency assessment of cognitive overload.

The knowledge and skills acquired within ErgoSchool will support the scientific and academic competencies of the students but also can be used to shape a friendly living environment and create self-determined quality of life.

**Supervisor:** Joanna Bartnicka, Ph.D., Eng., Vice Director for Science in the Institute of Production Engineering

**Organizer:** Faculty of Organization and Management

**Contact:** joanna.bartnicka@polsl.pl; 0048 504656789

### Detailed programme:

#### **Human Factors in Product & Services Design**

- OM1.**
- Anthropometry and its role in Product & Services Design
  - Virtual technologies in Human Factors Design
  - Innovation based ergonomics

#### **Cognitive engineering – how to be effective and safe**

- OM2.**
- Cognitive process. Attention – sensation – perception
  - Memory, reasoning and information processing
  - Cognitive overload: information supply, information demand, multitasking and interruptions

#### **Occupational and public safety – new methods and case studies of how to be protected from hazards**

- OM3.**
- Risk factors in human environment
  - Hazard maps - creation and use

#### **Design for all (DfA) – the new approach of equality and non-discrimination in products and services design**

- OM4.**
- Accessibility based and non-discriminatory products and services (intuitive access to information, intuitive orientation, mobility and safety)
  - Colors and signs in open and building space

All courses will be provided with the use of dedicated case studies, lectures and interactive workshops based on examples from urban space and buildings designing.

The courses will be held at specialized laboratories with research and multimedia equipment.

**Proposed number of the summer school students:**

10 + 3 (optionally) – all Ph.D. students.

**Faculty capability:**

The project will be carried out by teachers of the Faculty of Organization and Management.

## Electrical Engineering [EE]

**Field of Interest:** electrical engineering, automation and mechatronics

**Summer school title:**

*‘Smart-house: Energy systems and ICT for intelligent building in the Smart City’*

**Short description:** Participants will be introduced with variety of topics of electrical engineering, automation, IT and mechatronics related to smart house. A smart house is the object in public space characterized by a such features like energy efficiency, prosument energy use, automation of control and protection and finally ergonomic structure of mechatronic systems. Problems discussed during the school will be focused on prosument energy production and consumption, system of power conditioning, systems of automation, monitoring and control, including mechatronics and telecommunication. Participants of the school will develop own project of intelligent house including aspects of energy efficiency, energy quality, transmission data and energy and multifunctional systems of monitoring, control and protection of the house.

**Supervisor:** Mariusz Stepień, Ph. D.

**Organizer:** Faculty of Electrical Engineering

**Contact:** mariusz.stepien@polsl.pl; +48 32 237 26 91

### Detailed programme:

EE1.	Introductory lecture: Structure of intelligent house in respect of energy automation and mechatronic
EE2.	Energy sources and energy systems of smart houses
EE3.	Energy quality, power conditioning and utilization
EE4.	Smart house - automation and monitoring
EE5.	Actuators and executable systems of mechatronics
EE6.	New materials and technologies for smart houses

### **Proposed number of the summer school students:**

10 + 3 (optionally) – all Ph.D. students

### **Faculty capability:**

The project will be carried out by teachers of the Faculty of Electrical Engineering involved in broad range of research related to automation, power generation and conversion, measurement, sensorics and mechatronics. Experimental part of the school will be carried out at laboratories of Electrical Engineering equipped with high quality, modern equipment and apparatus.



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## Faculty of Mining and Geology [MG]

**Field of Interest:** Safety Engineering

**Summer school title:**

*'Crisis management in the urban space'*

**Short description:** The our summer school included a lectures and practical project connected with identification of Critical Infrastructure located in the urban space, together with the identification of threats, the construction of scenarios and the risk assessment in case of it's disruption. Additionally, in the Safety Engineering Laboratory there will be conducted practical training of first aid education. Teaching resuscitation will be done using audiovisual techniques, modern training equipment such as resuscitation phantoms with a set of light indicators, automatic AED defibrillation equipment, and many more.

**Supervisor:** Katarzyna Tobór-Osadnik, Ph.D. (Eng.)

**Organizer:** Faculty of Mining and Geology

**Contact:** katarzyna.tobor@polsl.pl

### Detailed programme:

<b>MG1.</b>	Critical infrastructure (lectures+exercices)
<b>MG2.</b>	Risk management/ Build an Effective Project Team (lectures+exercices)
<b>MG3.</b>	Emergency medical services (practical exercices)/Energy Security Risk in the urban space (lectures+exercices)
<b>MG4.</b>	Center for Crisis management (Gliwice) – study visit
<b>MG5.</b>	Escape routes plan (field exercices and laboratory)
<b>MG6.</b>	Anti-Terrorism Office (Katowice) – study visit

### **Proposed number of the summer school students:**

10 + 3 (optionally) – all Ph.D. students

### **Faculty capability:**

The project will be carried out by teachers of the Faculty of Mining and Geology

## Faculty of Civil Engineering [SE]

**Field of Interest:** structural engineering

**Summer school title:**

*'Innovative materials and technologies in structural engineering'*

**Short description:** The idea of this summer school is to teach the participants about the most modern achievements in the functional materials for dedicated applications, in the cases of architectural purposes, civil engineering and the so-called special applications inside city infrastructure design. The students will have a chance to learn and discuss about new concepts and achievements of science and technology in area of Structural Engineering. The school is planned in the form of lectures, workshops, panels and laboratory with tests on natural scale elements.

**Supervisor:** Marcin Górski, PhD

**Organizer:** Faculty of Civil Engineering

**Contact:** marcin.gorski@polsl.pl

### Detailed programme:

- SE1.** Innovative structural materials, 4h lectures + 4h lab (including 2h lecture for all participants entitled: 'Functional materials of the future', additionally lecture on 'Conductive materials in Construction' and 'Carbon based materials').
- SE2.** Mechatronics in construction' 4h lectures + 4h lab
- SE3.** 3D print in construction' 4h lectures + 4h lab
- SE4.** Bridges of the future' 4h lectures + 4h lab
- SE5.** Innovative methods on monitoring and strengthening of structures' 2h lectures + 6h lab
- SE6.** Architects' dreams about perfect structural material' 4h lectures + 4h lab
- SE7.** Famous imaginary structures – technique vs reality'

**Proposed number of the summer school students:** 10

### **Faculty capability:**

The project will be carried out by teachers of the Faculty: Department of Structural Engineering, Department of Structural Mechanics and Bridges. All have wide experience and English language with 12 years of running regular BSc and MSc courses in English.

**Key persons:** Marcin Górski, Szymon Dawczyński, Rafał Krzywoń, Marek Salamak, Małgorzata Krystek, Natalia Paszek, Rafał Białozor