

I. Research group heading/name & full address/affiliation

GIS implementation in analysis of environmental factors

UTP University of Science and Technology in Bydgoszcz
Faculty of Civil and Environmental Engineering and Architecture
Av. Prof. S. Kaliskiego 7, 85-796 Bydgoszcz, Poland

II. Name of the group's leader with a short BIO (CV).

PhD Adam Bujarkiewicz

Degree: MSc. degree of Civil Engineering (1994) University of Technology and Agriculture in Bydgoszcz, PhD in the field of geodesy and cartography with a specialization in GIS (2003) University of Warmia and Mazury in Olsztyn

Workplace: assistant professor, University of Science and Technology in Bydgoszcz, Faculty of Civil and Environmental Engineering and Architecture

Scientific activity: author and co-author more than 45 research papers, participant in more than 15 national and foreign conferences

Research areas:

- GIS application of spatial analysis and management of developed space resources,
- designing and building integrated systems of measurement and control using GNSS,
- research buildings geometry,
- determination of structure displacements and deformations.

Professional experience: project participant:

1. Environmental determinants of sustainable development of agriculture and rural areas in Kujawy-Pomerania Province
2. Implementation of integrated calls system of identification and location on numerical map of Bydgoszcz
3. GIS for educational institutions in Bydgoszcz with demographic analysis tools
4. Bydgoszcz acoustic map implementation with a comprehensive system: management, updating and sharing - coordinator of data acquisition and GIS processing
5. Elaboration scheme of sewage system in GIS database for the Urban Water Supply and Sewage System in Bydgoszcz - project manager

III. Names of the group's members and their research areas/interests.

PhD Jacek Sztubecki - surveying, research buildings geometry, determination of structure displacements and deformations

PhD Małgorzata Sztubecka - environmental engineering, environmental shaping and protection: soundscape, acoustic climate

IV. *Leading research topic of the group.*

Geographic Information System implementation in analysis of environmental factors

V. *Best realizations of the main research topic (brief characteristics or description).*

- Acquiring and processing GIS data, spatial analysis for the implementation of Bydgoszcz acoustic map
- Elaboration scheme of sewage system in GIS database for the Urban Water Supply and Sewage System in Bydgoszcz.
- GIS database elaboration of “Nature 2000” spaces - project “Draft plans of protection tasks for “Nature 2000” spaces in Kujawy-Pomerania Province and Mazovia Province”

VI. *General expression of interests.*

- Multi-Criteria Evaluation in assessment of usage renewable energy sources
- Possibilities and effectiveness of the use of Renewable Energy Sources installations in urban areas
- Renewable Energy Sources evaluation of factors quality

VII. *Specific interests and additional topics of extended interest.*

- Optimizing of RES usage in energy efficiency of buildings evaluation
- Shading buildings analyses, taking into account existing and planned buildings
- Elaboration of GIS spatial data procedures and analyzes for systems space management
- Determining the solar energy potential in urban areas
- Subjective perception of Renewable Energy Sources existing installations in urban areas
- Acoustic space shaping of green areas

VIII. *Other important characteristics of the group.*

The research group includes people involved in mutually additional issues related to (follow up) the main topic.

IX. *Main group’s achievements.*

Research group has extensive knowledge in geodesy and cartography, Geographic Information System, environmental protection and shaping. The group has access to professional tool and laboratory facilities.

X. *Max. 5 selected publications and/or other relevant accomplishments.*

1. Bujarkiewicz A., Sztubecki J., Sztubecka M. 2016. Analysis of urban areas solar potential on the example of Bydgoszcz. Renewable Energy Sources - Conference in Racibórz, conference materials - in progress
2. Bujarkiewicz A., Adamczyk-Łojewska G. 2016. Polarization processes in the polish economic space. Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu, z.417 (in Polish)
3. Pawłowski K, Bujarkiewicz A., Sztubecki J., Sztubecka M., Pasela R., Chalamoński M., Sobczak-Piąstka J., Piotrowska E. 2016. Buildings designing in energy-saving technology. Bydgoszcz : Agencja Reklamowa TOP (in Polish)
4. Sztubecki J., Sztubecka M., Bujarkiewicz A. 2015. The usage of Geographic Information Systems in management of green areas, Ekologia i Technika 134, 1 (in Polish)
5. Sztubecka M., Sztubecki J. 2016. Analysis of the acoustic climate of a spa park using the fuzzy set theory. Open Engineering, volume 6, Issue 1