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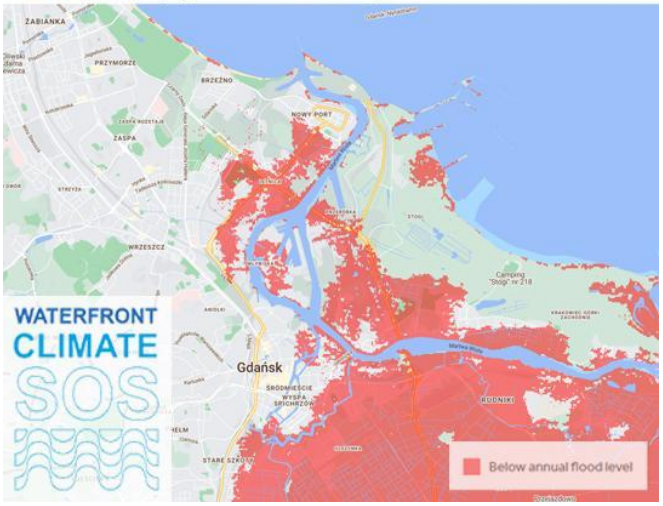
Photo: Google Maps

Sea level rise and coastal floods – 2060;
Leading Consensus, Intergovernmental Panel on Climate Change (IPCC) 2021.
Source: Climate Central, https://coastal.climatecentral.org



Term: **2 sem.**	Title of the course / Elective design I: **Waterfront Areas in a Changing Climate – Solutions for Gdańsk**	ECTS: **2**
Type of studies: **MSc in Arch.**		Acad Year: **2022/2023**

Department of Urban Architecture and Waterscapes; Department of History, Theory of Architecture and Monument Conservation; Department of Housing and Architecture of Public Buildings

Seminars & assignments: 30 h

Tutors: Prof. Lucyna Nyka, Ph.D., D.Sc., Architect, Prof. Jakub Szczepański, Ph.D., D.Sc., Justyna Borucka, PhD Eng. Architect, Jan Cudzik, PhD Eng. Architect, Joanna Badach, PhD Eng. Architect, Szymon Kowalski, Ms.C. Eng. Architect

Brief description of the subject:

Waterfront Areas in a Changing Climate – Solutions for Gdańsk – This course explores challenges, conflicts and concepts in waterfront areas, their connection to architectural and urban design in the time of climate changes and their importance for a future of the cities. The aim of this course, based on the case study city of Gdańsk, is to understand the problem of climate change and develop innovative solutions of architectural and urban design responding to a significant variation of average weather conditions.

This elective design course will be carried out in the form of a block course as a part of the international research workshops taking place between 10 October and 8 November 2022. It is linked to two other obligatory courses (see the attached description):

- **CAD. Integrated architectural design (Techniki komputerowe - integracja procesów projektowania)** (tutor: dr inż. arch. Joanna Badach)
- **Methodology of scientific work (Metodyka pracy naukowej)** (tutors: prof. dr hab. inż. arch. Lucyna Nyka, prof. dr hab. inż. arch. Jakub Szczepański, dr inż. arch. Justyna Borucka)

Students who choose to participate in this elective design course will be automatically enrolled in these two courses. They serve as a preparatory stage for the workshops and the technical support throughout the event and after its termination, carried out on a weekly basis, starting from 3 October.

Objectives:

The goal is to understand the most important issues and challenges in architecture and city planning in the context of climate change.
This includes:
(1) Understanding the main problems related to climate change in Gdańsk such as:
- rising sea level which jeopardizes safety of urban and rural areas
- lowland territories even more prone to flooded by heavy storms that push water back from the sea into the river
- increase of rainfall and the risk surface flooding
(2) Understanding the interactions between design interventions in the waterfront areas in correlation with the problems of climate change by recognising strategies :
- traditional "hard" or "grey" defensive measures include introduction of build-up engineering constructions such as breakwaters or water barriers
- "soft" approaches based on ecosystem services and ecosystem based adaptation
- the strategy based on integration of the two approaches is referred to as "mixed" change
(3) Responding to the question: how to adapt to climate change based on an example of the city of Gdańsk?

A multidisciplinary approach, team work, critical thinking and understanding of the approaches to the issue of climate adaptation.
The emphasis is on students' empathy, critical and emotive capacity to understand and translate the challenges and problems of changing climate into an innovation and creative solutions for the cities.

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The course is strictly linked with the international research workshops within the research project *"Linking the research and innovation through technology for excellence of resilience to face climate changes"* / H2020 MSC RISE - SOS Climate Waterfront 2019-2023 (for details see: http://sosclimatewaterfront.eu/).

SOS Climate Waterfront is an interdisciplinary project that aims to explore waterfronts in Europe that are facing climate change and involve academic and non-academic institutions from such cities as: Lisbon, Gdańsk, Rome, Stockholm, Thessaloniki, Ankara, Heerhugowaard (NL).

As a part of this project, international workshops with the members of all the above-mentioned institutions will be carried out in Gdańsk with the participation of the Gdańsk Tech students. **The workshops will take place in Gdańsk between 10 October and 8 November 2022.**

Content

The course contents include the following teaching elements:

Week 1 (10 – 16 October)

- general presentation of the topic and location, site trips (including a boat cruise), working on research and concept of the project related to the topic and location

Week 2 (17 - 23 October)

- working on research and concept of the project, group presentation and discussion

Week 3 (24 – 30 October)

- working on realization of the project, individual and group discussion, participation in the Smart City conference

Week 4 (31 October – 6 November)

- working on the presentation of the project & critical review - (posters, models, publication)

Dissemination stage (within the CAD. Integrated architectural design and Methodology of scientific work courses) – until December 2022.

Methods: The multidisciplinary course will be held as a design workshop including an introductory lecture, discussion and group project work.

Learning Outcomes: The attending students can significantly extend their analytical, logical and critical thinking and creative problem in the field of contemporary design adapted to climate changes.

Students learn to:

- detect citations and references in modern design in the context of climate changes;
- understand and solve design problems in the climate change context.

The course enables students to understand and recognise challenges, conflicts and concepts of architectural and urban design in the context of the sea level rise and coastal floods.

Prerequisites: Great willingness for multidisciplinary approaches, openness for research based, innovative structural design

Assessment Methods and Criteria: Evaluation of the final study and task

Study Material: Reading List, excerpts of lectures, definitions etc. will be provided to students in digital format with respect to the topic of the seminars.