



---

***Erasmus Blended Intensive Program (BIP)***

***University of Warmia and Mazury in Olsztyn***

***2-6 June 2025 r.***

***Olsztyn, Poland***

**2024-1-PL01-KA131-HED-000209172-1**

**HISTORIC AND CURRENT ISSUES OF MILITARY STRUCTURES IN CENTRAL EUROPE**

The Department of Civil Engineering (University of Warmia and Mazury in Olsztyn, Faculty of Geoenvironment) invites doctoral, master's, and engineering students to an intensive Erasmus Blended Intensive program, through which they will be able to acquire new knowledge and skills in the field of civil engineering.

**Course Description:**

History and the present show how crucial the sense of security and the protection of one's territories are. People have always paid attention to threats that could come from various directions and disrupt not only territory but also peace. In the past, builders focused on constructing defensive structures or fortifications where they could feel safe in uncertain times, utilizing all available "novelties." Nowadays, they must also apply the best technological and construction-material solutions to ensure safe shelter.

Building materials have evolved over time, allowing for the creation of increasingly larger and more impressive fortifications and defensive structures. Changing technologies and new construction solutions supported efforts to protect families and territories. Walls provided shelter from deadly projectiles, allowing survival or simply hiding from aggression. Structures built with various technologies and materials enabled survival even for extended periods. However, to achieve this, besides living and office spaces, social and living quarters had to be provided. Ensuring the supply of clean water and air to such a structure was a significant challenge, where human ingenuity and innovation were helpful.

Technology changes rapidly, and civil engineers and constructors must keep up with these changes to make good decisions and create increasingly modern and durable buildings.

In addition to traditional and new materials, engineers are increasingly using new technologies to quickly and solidly design, construct, monitor, and maintain in the best possible condition. This allows safe execution and use of the building. In the past, they used ink and paper for design, cranes, counterweights, and simple tools on construction sites. Today, they use various computer software and simulators, remotely controlled machines, drones, virtual reality, or laser scanners on construction sites.

The main goal of the course is to provide students with historical and current knowledge about key challenges in defensive construction. The course will deepen students' understanding of historical and contemporary construction materials and technologies used in creating such structures.



## Office for International Cooperation

---

The following topics will be discussed during the course:

- Building materials and construction solutions used in defensive construction in the past and present,
- Use of modern tools and technologies in construction design,
- Use of numerical and virtual techniques in creating simulations and modeling buildings,
- Modern technologies in coordinating and monitoring construction work,
- Historical and modern solutions facilitating living conditions and protecting human health and life.

In discussing these topics, tools such as laser scanners, 3D printers, drones, VR technology, modern computer software, and measuring tools will be utilized.

### The course consists of two parts:

**Part I – Distance Learning on May 29, 2025** Distance learning will be conducted in an e-learning environment (MS Teams). All related instructions will be sent to registered participants. Remote sessions will be in the form of lectures.

The following topics will be presented in the e-learning classes:

- Organizational information,
- Introduction to the historical aspects of the construction of defensive structures and fortresses in northern Poland,
- Technologies and materials used in defensive concrete and brick construction, past and present,
- Supply systems for fortresses and defensive structures, including air and drinking water (ventilation and plumbing systems), past and present,
- Modern technologies in managing and assessing the technical condition of historical buildings (Building Information Modelling, laser scanning).

**Part II – In-Person Learning from June 2 - 6, 2025** This part will include in-person activities where students will:

- Attend lectures,
- Participate in fieldwork and study trips,
- Conduct tasks in the laboratory and computer room,
- Present group work results on a design-construction project.



## Office for International Cooperation

The course will be conducted by a highly qualified staff from the following universities:

- University of Warmia and Mazury in Olsztyn, Poland,
- VSB-Technical University of Ostrava, Czech Republic, **CZ OSTRAVA01**
- Brno University of Technology, Czech Republic, **CZ BRNO01**
- Estonian University of Life Sciences, **EE TARTU01**
- Gheorghe Asachi Technical University of Iasi, **RO IASIO5**
- Slovak University of Technology Bratislava, **SK BRATISL01**
- Technical University of Košice, Slovakia. **SK KOSICE03**

Upon completing the course, students will receive 3 ECTS credits (including the distance learning part). The course is also open to students from other universities. It is planned for 15-20 participants.

**Course Coordinator – Dr. hab. inż. Jacek Katzer, Prof. UWM** ([jacek.katzer@uwm.edu.pl](mailto:jacek.katzer@uwm.edu.pl),

phone: +48 604 286 582)

**ERASMUS + Coordinator – Anna Dąbrowska** ([ania.dabrowska@uwm.edu.pl](mailto:ania.dabrowska@uwm.edu.pl), phone: +48 89 523 34 15)

### Course Framework:

	2 <sup>nd</sup> June (Monday)	3 <sup>rd</sup> June (Tuesday)	4 <sup>th</sup> June (Wednesday)	5 <sup>th</sup> June (Thursday)	6 <sup>th</sup> June (Friday)
8.30 - 9.00	Registration,				
9.00 – 10.30	Introduction	Computer activities	Study visit, concrete, defense structures (Mamerki),	Study visit, brick fortifications (Malbork)	Presentation and competition of workshop works
10.30 - 11.00	Coffee break	Coffee break			Coffee break
11.00 – 12.30	Lectures	Lectures			Closing lecture
13.00 – 14.00	Lunch	Lunch			Lunch
14.30 – 16.00	Field activities	Workshop			
16.15 – 16.30	Coffee break	Coffee break			
16.30 – 18.00	Field activities	Workshop			
20.00 – 22.00	Conference dinner				