

## Proposed topics for DIPLOMA THESES

- **Engineer (Bachelor) Thesis**

1. Self-healing concrete and its applications
2. Photovoltaics - applications in building engineering
3. Photovoltaics - applications in road infrastructure
4. Building engineering and sustainable development
5. Energy-saving building engineering
6. Building Information Modelling (BIM)
7. Digital twin in building engineering
8. Design of a local kindergarten
9. Design of a car showroom with facilities
10. Design of a gas station with facilities

- **Master of Science Thesis**

11. Self-healing concrete and its modelling and testing
12. Strength analysis of photovoltaic panels and their supporting structures
13. Static analysis and design of spatial truss structures (\*)
14. Static analysis and design of composite steel-concrete beams (\*)
15. Static and dynamic analysis of elastic plate structures using the finite element method (FEM) (\*)
16. Static and dynamic analysis of elastic skeletal structures using FEM (\*)
17. Elastic-plastic analysis of spatial trusses using FEM (\*)
18. Elastic-plastic analysis of plane frames using FEM (\*)
19. Design of a concrete warehouse hall (reinforced or/and precast elements)
20. Design of a concrete tank for liquids or a silo for bulk materials

(\*) - the possibility of extension by developing a computer program and a digital twin (DT)

**Remarks:**

1. The candidate can propose the topic which he/she is interested in.
2. Scope of work to be directly agreed with the candidate.

  
prof. M. Kuczma