



1. General information about course

- **Title of the course**
- EN1992-1-1 concrete design using strut and tie (SAT)
- **Professor:**
- Armin Hadrović
- **Institution:**
- UNMO
- **E-mail**
- armin.hadrović@unmo.ba

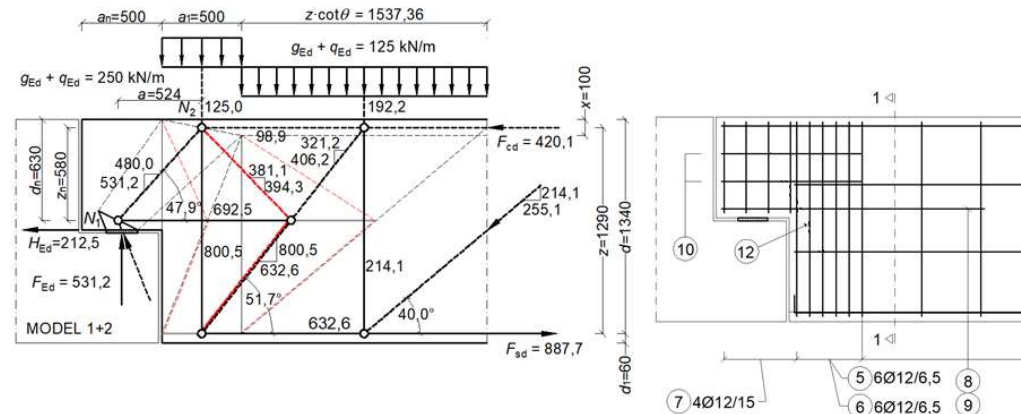
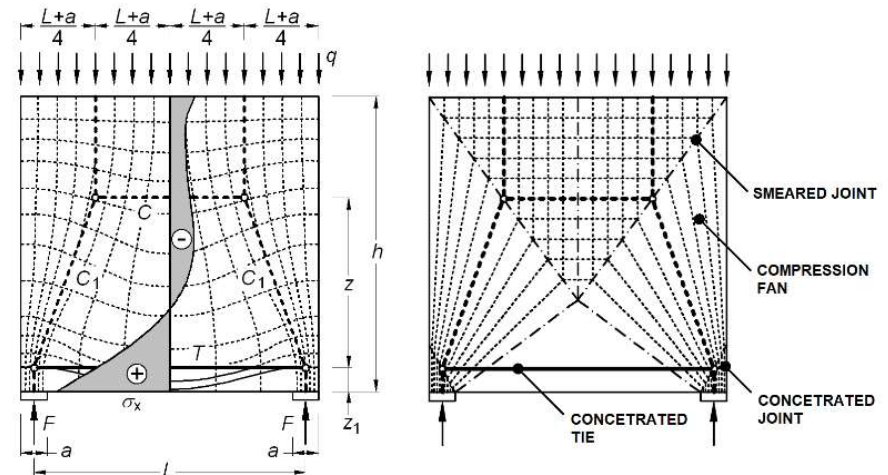


2. Description of the course

1. THEORETICAL BACKGROUND TO STRUT AND TIE (ELASTIC FEM ANALYSIS, THEORY OF PLASTICITY, RELATION TO OTHER DESIGN METHODS)

2. PRINCIPLES OF STRUT AND TIE MODELING. ELEMENTS OF THE MODEL (STRUTS; CONCENTRATED AND SMIERED JOINTS AND TIES) LOAD PATH AND CHARACTERISTIC STRESSES METHODS. COMPATIBILITY, DUCTILITY AND OPTIMISATION ISSUES. FAILURE CRITERIA FOR TIES, JOINTS AND STRUTS.

3. PRACTICAL DESIGN THROUGH WORKED EXAMPLES AND REINFORCEMENT LAYOUT AND DETAILING. CORBELS, HALF JOINTS, DIRECTLY AND INDIRECTLY SUPPORTED DEEP BEAMS, PILE CAPS, FRAME CORNERS, POCKET FOUNDATIONS, TREATMENT OF OPENINGS IN SLENDER BEAMS AND SHEAR WALLS





3. Target group and prerequisites

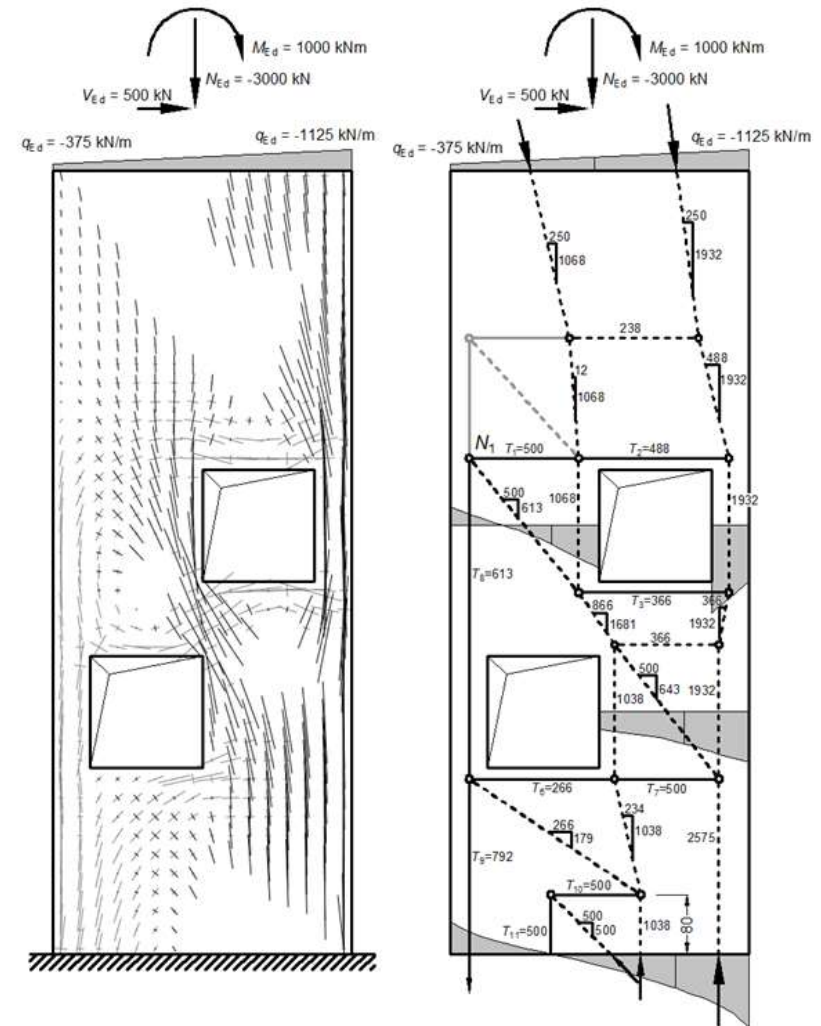
Target group/Learners profile

- Students of the II cycle - Faculty of civil engineering
- All civil engineers unfamiliar with strut and tie modelling.

Prerequisites (required pre-knowledge and experiences)

Understanding of the:

- basic principles of theory of elasticity
- simple FEM analysis
- principles of truss analysis
- fundamental behavior of RC elements (mechanical properties of concrete and reinforcement, composite behavior via bond, uncracked and cracked state).

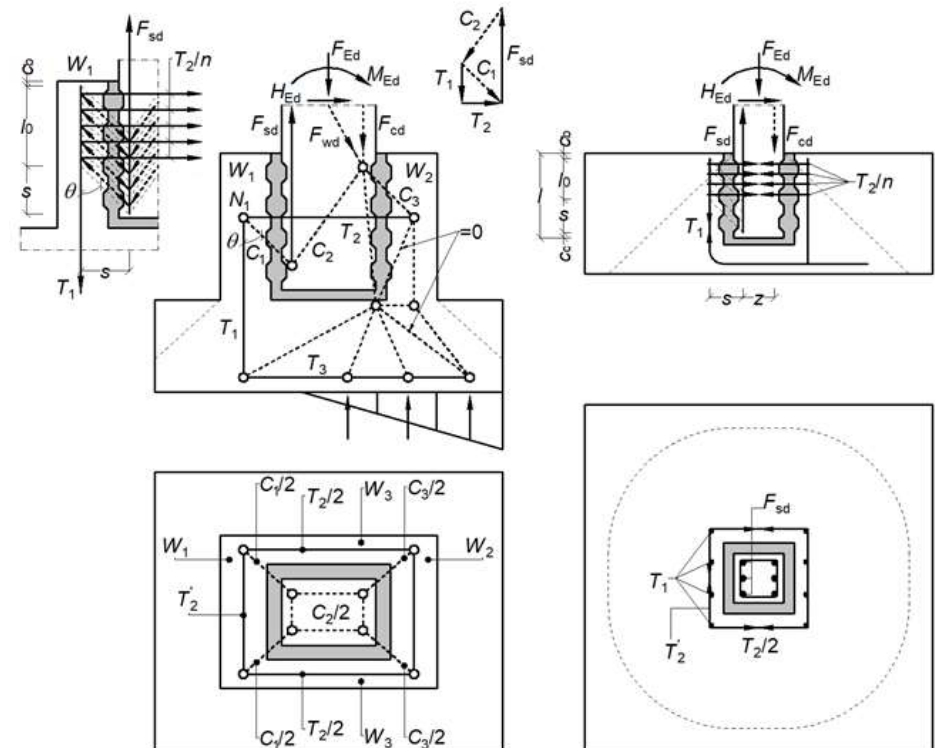




4. Learning outcomes

The student will be able to:

- transfer their own practical knowledge from actual codes of practice to Eurocodes, if relevant,
- understand theoretical background to SAT,
- create their own SAT model,
- design RC elements using SAT method,
- prepare reinforcement drawings based on EN 1992 layout and detailing rules and accepted SAT model.





5. Training and learning methods

- Reading materials (given to students).
- Assigning individual tasks for each student - Individual research (development of learning through practice as well as critical thinking, research and managing data skills) – tasks will be prepared based on student's professional background. Work will be supervised by the professor.
- Each student will write a project (individual project) (development of learning through argumentation skills) and make posters (and power point presentation).

