

**Faculty of Architecture****Department:** Architecture and Urbanism**Professional area:** Architecture, Civil Engineering and Geodesy**Major:** Architecture**Educational-and-qualification Degree:** Master**COURSE DESCRIPTION**

1. **Course unit title:** Structural Mechanics – part 2
2. **Course unit code:** CIE 2016
3. **Type of course unit:** compulsory
4. **Level of course unit:** Master
5. **Year of study:** second
6. **Semester when the course unit is delivered:** third
7. **Number of ECTS credits allocated:** 6
8. **Name of lecturer:** Assoc. Prof. Eng. Nelly D. Trizlova, PhD
9. **Learning outcomes of the course unit:** Students have to be able to define the diagrams of cross-sectional efforts of straight girders and three-joint frames, to measure columns, subjected to tensile-pressure and torsion shafts, special bending girders and resistance rods.
10. **Mode of delivery:** face-to-face
11. **Prerequisites and co-requisites:** students have to be able to define support reactions, gravity center of composite cross-section.
12. **Course contents:** The course includes making diagrams of the bending moments according to the key points method and then making diagrams of cutting and normal strengths according to the bending moments. It also studies the lines of influence, border diagrams and displacements.
13. **Recommended or required reading:**
  - Тризлова Нели, Съпротивление на материалите, В., 2006г.
  - Бацинов Ц., Съпротивление на материалите, В., 1999г.
  - Бацинов Ц. и др., Съпротивление на материалите в примери и задачи, В., 1999г.
  - Кисьов и др., Съпротивление на материалите, Т., С., 1978г.
  - Тимошенко С., Соппротивление материалов, Наука, Москва, 1965г.
  - Феодосиев Б., Соппротивление материалов, Техника, Москва, 1965г.
  - Димов Д., Таблици и формули по съпротивление на материалите, Т., С., 1992г.
  - Кисьов Ив., Таблици по съпротивление на материалите, Т., С.
  - Stephen Elmer Slocum, Resistance of materials, London, 2010.
  - James M. Gere, Barry J. Goodno, Mechanics of Materials, 2011.
14. **Planned learning activities and teaching methods:** lectures, seminars, contact hours, project assignment
15. **Assessment methods and criteria:** The course finishes with a written exam at the end of the semester with 4 hours limit, which includes two tasks and a theoretical question from the synopsis. The first task is to draw diagrams of the internal forces of a three-joint frame. The second task is to put measures of a statistically undefined structure tensile-pressure loaded or pure rod torsion with a circular or non-circular cross-section, special torsion, and resistance. The theoretical question is from the synopsis and includes the entire lecture course. Each of the components weighs equally and a student receives a positive grade if he has positive grades from the three components.

The participation of the student in the classes during the semester is taken into consideration when the final grade is formed (especially when the student did not pass the exam very well).

**Motivating the received grade:**

The student receives an excellent grade to the first task when he finds the bearing reactions of the structure, makes diagrams of the cutting efforts and does by himself all the necessary checks of the diagrams. The grade is decreased by one unit every time when the lecturer helps the student, i.e. if the lecturer helps four times the student is awarded a poor grade.

The student receives an excellent grade to the second task if he makes correctly the diagrams of the cutting efforts and puts measures to the structure. The grade is decreased by one unit every time when the lecturer helps the student, i.e. if the lecturer helps four times the student is awarded a poor grade.

The student receives an excellent grade to the theoretical question if there is a full treatment of the problem, the respective scheme is drawn and the formulas are correctly derived.

16. **Language of instruction:** Bulgarian

17. **Work placement(s):** none