COURSE DESCRIPTION

|  |  |
| --- | --- |
| ***Name of the course:*** | MECHANICS 2 (MECHANICS OF MATERIALS) |
| *Code of course:* | [PM-KSTNE043](http://intra.pmmik.pte.hu/subjects/subject/890?filter=) |
| ***Number of lectures per week***  ***(presentation/practical):*** | 1/2 |
| ***Requirement:*** | Exam |
| ***Number of credits (ECTS):*** |  |
| ***Proposed term****:* | 2nd semester |
| ***Department:*** | Department of Structural Engineering 100% |
| *Preliminary study requirement*: | MECHANICS 1 (STATICS) |
| ***Programme:*** | Architect, Erasmus |
| ***Aim:*** Provision of basic information int he field of dimensioning basic structural components of construction and selecting the most appropriate materials. | |
| ***Short description:*** Students continue to learn the fundamentals of mechanics, compression and stressing of bar structures, which helps them with dimensioning basic structural components of construction and selecting the most appropriate materials. In particular, students cover the following topics: stress and deformation, Hookes Law, axial prestressing and compression of bar structures, pure shear, design of bolted joints, wooden joints, bending stress, perpendicular and oblique bending, shear stresses with simultaneous bending, eccentric stresses of materials with and without tension strength, issues of design and examination, EUROCODE’s and Hungarian standards. | |
| ***Other important informations*** | |
| ***Course leader /lecturer/:***  ***Practical teacher:*** | Zoltan ORBAN, PhD. /Tamas JUHASZ/  Tamas JUHASZ |
| ***Language*:** | English |
| ***Terms of certification:*** | Obtainable amount of points during the term: 100 points   * Test: 50 points * Homeworks: 50 points   In all cases, 50% in power required |
| ***Exam:*** | Written examination in the examination period. (50 points)  At least 50% in power required. |
| ***Marks:*** | By the total power during the term:  Fail (1) - 49,9% -150 pont  Pass (2) 50,0% - 62,9% pont  Satisfactory (3) 63,0% - 73,9% pont  Good (4) 74,0% - 84,9% pont  Excellent (5) 85,0% - 100% |
| ***Educational materials:*** | M. Vable, Mechanics of Materials. Michigan Technological University  *http://www.me.mtu.edu/~mavable/Book/Entire%20Book.pdf* |
| ***Terms of registration:*** | via ETR system |

DETAILED SCHEDULE

|  |  |  |  |
| --- | --- | --- | --- |
| **Week** | **Date** | **Presentation**  /Tuesday 9:30-11:00 a.m./ | **Practical**  /Tuesday 7:45-9:15 a.m./ |
| 1. | February 04 | - | Registration. Repetition. |
| 2. | February 11 | Introduction. Geometrical properties of cross sections. | Centroid, first and second moments of inertia. |
| 3. | February 18 | - | Product of inertia, principal directions. |
| 4. | February 25 | Stresses. Principal stresses. Average normal and shear steresses in case of axial loading, and simple shear. | Simple tension, simple compression. |
| 5. | March 04 | - | Simple shear. Bolted joints in single and double shear. |
| 6. | March 11 | Strains. Normal strain, shear strain, cartesian strain components. Transverse contraction. Mechanical properties of materials. | Elongations, distorsionss transverse contractions. |
| 7. | March 18 | - | Elongations, distorsionss transverse contractions. |
| 8. | March 24 | Mechanical properties of materials. Stress-strain diagrams. Elastic and plastic behavior. Hooke’s law. | Design of cross sections. |
| 9. | April 01 | - | Plastic resistance. |
| 10. | April 08 | Simple bending, torsion. Stersesses of beams. Zhuravskiy formula. | Stersesses of beams. |
| 11. | April 15 | - | Stersesses of beams. |
| 12. | April 22 | EASTER BREAK | |
| 13. | April 29 | Stability of compressed members. Buckling. | Consultation |
| 14. | May 06 | - | Test |
| 15. | May 13 | Closing | Closing, consultation |

Zoltan ORBAN, PhD

Course leader