COURSE DESCRIPTION

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| ***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:*** |  |
| ***Proposed term****:* | 2nd semester |
| ***Department:*** | Department of Structural Engineering 100% |
| *Preliminary study requirement*: | MECHANICS 1 (STATICS). |
| ***Programme:*** | Architect, Erasmus |
| ***Aim:*** Provision of basic information in the 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   * Tests: 2x50 points   In all cases, 50% in power required  by the visiting of the course 20 points obtainable |
| ***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:*** | Engineering, Mechanics of Materials CET 3135, Russel C. Hibbeler, Pearson Learning Solutions, 2013 ISBN: 978-1-256-61400-9  M. Vable, Mechanics of Materials. Michigan Technological University  *http://www.me.mtu.edu/~mavable/Book/Entire%20Book.pdf* |
| ***Terms of registration:*** | via NEPTUN system |

DETAILED SCHEDULE

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| **Week** | **Lecture**  /Tuesday 7:45-9:15AM/ | **Practical**  /Tuesday 9:30-11:00AM or 11:15-12:45AM / |
| 1st | - | Registration. Repetition. |
| 2nd | Introduction. Geometrical and material properties. | Centroid, first and second moments of inertia. |
| 3rd | - | Product of inertia, principal directions. |
| 4th | Stresses. Principal stresses. Average normal and shear steresses in case of axial loading, and simple shear. | Simple tension, simple compression. |
| 5th | - | Simple shear. Bolted joints in single and double shear. |
| 6th | Strains. Normal strain, shear strain, cartesian strain components. Transverse contraction. Mechanical properties of materials. | Elongations, distorsions transverse contractions. |
| 7th | - | Elongations, distorsions transverse contractions. |
| 8th | Mechanical properties of materials. Stress-strain diagrams. Elastic and plastic behavior. Hooke’s law. | Design of cross sections. |
| 9th | EASTER BREAK | |
| 10th | Simple bending, torsion | Simple bending, torsion |
| 11th | - | Stersesses of beams. |
| 12th | Stersesses of beams. Zhuravskiy formula. Stabilty problems | Stersesses of beams. |
| 13th | - | Consultation |
| 14th | Stability of compressed members. Buckling. | Test |
| 15th | - | Summary, evaluation |

Tamas JUHASZ

lecturer