General Information:

Name of Course: # ADVANCED MECHANICS

Course Code: PM-TSTNM0580A
Semester: 1st
Number of Credits: 6
Allotment of Hours per Week: 2 lecture and 2 Practical Lessons /Week
Evaluation: Exame (with grade)
Prerequisites: **none**

Instructors: **Dr Vanda Olimpia Pomezanski, associate professor**
Office: 7624 Hungary, Pécs, Boszorkány u. 2. Office N° B-340
E-mail: vanda@mik.pte.hu

Introduction, Learning Outcomes:
This course is aimed to provide basic and advanced knowledge on the principles of the continuum mechanics and equations of kinematics. Topics covered by the course include: Definition of strain, theory of small and large strains, strain tensors, definition of stress, stress tensors, stress and strain pairs, definitions of elastic, plastic and elasto-plastic material models, basic equations of continuum mechanics, work and energy theorems, displacement and force methods, stress functions, basic equations of beams, plates and shells. The course also includes applications and examples for all theorems.

Methodology:
The course is based on individual engineering skills with regular consultations and presentations.

Schedule:
The semester is divided into two principle periods and attendant exercises.

The rough outline of the schedule is as follows:
Week 1: Cross-sectional properties, Principal Inertia and Principal Axes for an area
Week 2: Stresses, General equations of Stress transformation
Week 3: Strains, General equations of Strain transformation
Week 4: Deflection of Beams and Shafts
Week 5: The small displacement theory
Week 6: Mechanical properties of a material
Week 7: Virtual work
Week 8: Influence Lines for Statically Determinate Structures
Week 9: Break
Week 10: Influence Lines for Statically Indeterminate Structures
Week 11: Equations of an Elastic Beam, Principle of Superposition
Week 12: Potential Energy
Week 13: Stability problems
Week 14: Mathematical background for Structural Analysis
Week 15: Application of stress functions in Structural Analysis

Studio Culture:
The course is based on through collaboration, participation and discussions trough lessons. This is an interaction between Students and Faculty; used the teaching methods like ‘Problem-based learning’ and ‘learning-by-doing’. The communication and work should be reflect a respect for fellow students and their desire to work with regard to noise levels, noxious fumes, etc – from each site of participants.

Attendance:
Attending is required all classes, and will impact the grade (max. 10%). Unexcused absences will adversely affect the grade, and in case of absence from more than 30% of the total number of lesson will be grounds for failing the class. To be in class at the beginning time and stay until the scheduled end of the lesson is required,

tardiness of more than 20 minutes will be counted as an absence. In the case of an illness or family emergency, the student must present a valid excuse, such as a doctor's note.

Evaluation + Grading
Grading will follow the course structure with the following weight: **Midterm Work 50%– Exam 50%.**

Grading Scale:

Numeric Grade:	5	4	3	2	1
	excellent	good	satisfactory	pass	fail
Evaluation in points:	91%-100%	76%-90%	61%-75%	51%-60%	0-50%

PTE Grading Policy:
Information on PTE's grading policy can be found at the following location:

Students with Special Needs:
Students with a disability and needs to request special accommodations, please, notify the Deans Office. Proper documentation of disability will be required. All attempts to provide an equal learning environment for all will be made.

Readings and Reference Materials:

- **ENGINEERING MECHANICS STATICS**, 13th edition, R. C. Hibbeler, ISBN-13: 978-0-13-291554-0
- **MECHANICS OF MATERIALS**, 9th edition, R. C. Hibbeler, ISBN-13: 978-0-13-325442-6
- **STRUCTURAL ANALYSIS**, 9th edition, R. C. Hibbeler, ISBN-13: 978-0-13-394284-2