General Information:

Name of Course:

MODELLING OF TRANSPORT PROCESSES

Course Code:	PMTRTNM704HA
Semester:	2th
Number of Credits:	4
Allotment of Hours per Week:	2 Lecture Lessons/Week
Evaluation:	Two Midterm Exam (with grade) and one Homework
Prerequisites:	None

Instructors: Levente Szabó, instructor
Office: 7624 Hungary, Pécs, Boszorkány u. 2. Office Nº B-142
E-mail: szabo.levente@mik.pte.hu
Office Phone: +36 72 503 650/23638
Office Hours: Wednesday 16:10-17:15

Introduction, Learning Outcomes:

After successful completion of the course students will be enlightened upon the main concepts of some parts of the classical physics. These skills will help them to make their future work better. During the semester, following topics will be taught: kinematics, dynamics, hydrodynamics, thermodynamics, electromagnetic waves, optical waveguides.

General Course Description and Main Content:

Short overview of the subject: introduction and use of kinematic and dynamic equations of a particle, kinematic and dynamic connections of rigid bodies, duress motions, collisions (central, not central, flexible, not flexible), vibrational and wave motion, material and flowing properties of mass-current, laminar and turbulent flow, equations of the conservation of mass, energy, and momentum (Euler, Bernoulli, etc). Basic concepts of thermodynamics, such as entropy, enthalpy, description of changing of states, Carnot-cycle, thermal ways of the energy transport. Basics of electromagnetic waves, free waves, perpendicular and angular incidence and reflection of plane waves. Dispersion. Basics connections of optical waveguide.

Methodology:

Demonstration of theoretical background in lectures and common solving of tasks on exercise.

Schedule:

Weeks	**Topics**	**Midterm exam**
1.	Introduction and use of kinematic and dynamic equations of a particle.	
2.	Kinematic and dynamic connections of rigid bodies.	
3.	Duress motions	
4.	Collisions (central, not central, flexible, not flexible), vibrational and wave motion.	
5.	Material and flowing properties of mass-current.	
6.	Laminar and turbulent flow.	
7.	Equation of the conservation of mass.	1st midterm test from topics 1-6.
8.	Equation of the conservation of energy.	
9.	**Spring holiday.**	
10.	Equations of the conservation of momentum.	
11.	Basic concepts of thermodynamics, such as entropy, enthalpy.	
12.	Description of changing of states, Carnot-cycle, thermal ways of the energy transport.	
13.	Basics of electromagnetic waves, free waves, perpendicular and angular incidence and reflection of plane waves. Dispersion.	
14.	Basics connections of optical waveguides.	
15.		Second midterm test from topics 7-14, Homework.

Attendance:
Attending is required all classes, and will impact the grade (max. 5%). 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

Homework and Attendence (20%)
Midterm Exam # 1 (40%)
Midterm Exam # 2 (40%)

1. Satisfactory work: Achieving more than 60% of the total points in the two written midterm assessments during the semester then the grading scale table will be applied to obtain the final result.

2. Unsatisfactory work: When the total points of the two midterm written tests are less than 61% together then a new test need to write from the whole topics of the semester in the exam period. A minimum of 61% is required to pass on this exam.

Grading Scale:

Numeric Grade:	5	4	3	2	1
Evaluation in points:	91%-100%	81%-90%	71%-80%	61%-70%	0-60%

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:
[1] Alvin Hudson, Rex Roland Nelson,
University Physics, College & University Press, 1990
[2] Hugh D. Young, Roger A. Freedman, A. Lewis Ford, University Physics with modern physics, Addison-Wesley, 13th edition