UNIVERSITY OF PANNONIA

COURSE DATASHEET

Semester:	2016/17/1
Course:	Applied Mechanics- Vehicle Mechanics
Code:	VEMKGEM444M
Responsible department:	Institute of Mechanical Engineering
Department code:	MKGEI
Responsible instructor:	dr. Imre Timár

Course objectives:

Learning the basics of the finite element method and construction of vehicles

Course content:

Finite element analysis: Background of the method, history. Introduction to the use of a finite element program.

Finite element analysis: Energy methods, discrete systems. Energy methods, continuous systems.

Finite element analysis: Rayleigh-Ritz method applied to a tensioned rod. Solution of the problem of a tensioned rod with finite element method.

Finite element analysis: Method of structural analysis, stiffnes matrix of a tensioned rod in local coordinate system. Examination a system of rods.

Finite element analysis: Stiffnes matrix of a tensioned rod in global coordinate system. Examination of a latticed structure.

Finite element analysis: 2D-problems, theory. 2D-problems, linear and quadratic finite elements.

Finite element analysis: 2D-problems, problem solving with computer program. Test.

Introduction to applied mechanics. Why applied mechanics? Different engineering science branches in applied mechanics. Practical and active examples. Analysis methods in applied mechanics.

Relationship between applied mechanics and vehicle mechanics. Different type of vehicle motors: Otto motor Diesel motor.

Engine parts. Two stroke engine-four stroke engine.

Cooling and lubrication system. How Otto motor works? Motor characteristics. Diesel motor. Other motor types.

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COURSE DATASHEET

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Course: Applied Mechanics- Vehicle Mechanics

Code: VEMKGEM444M

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Responsible instructor: dr. Imre Timár

Course content:

Powertrain, transmission, clutch.

Brake system, wheel system, suspensions.

Students' presentation.

Requirements, evaluation and grading:

One test and one presentation.

Required and recommended readings:

Dr. Fodor Tamás-Dr. Orbán Ferenc-Dr. Sajtos István: Mechanika, Végeselem-módszer, Elmélet és alkalmazás, Szaktudás Kiadó Ház, Budapest, 2005

M. Csizmadia Béla-Nándori Ernő: Mechanika mérnököknek, Modellalkotás, Nemzeti Tankönyvkiadó, Budapest, 2003