Name: Mathematics II.	Neptun-code: BGRMA2HNEC BGRMA2KTNC BGRMA2ENND BGRMA2ANND	Number of periods/week (lec/sem/lab) regular: 3/2/0
Credit points: 6 Requirement (assessment method): mid-term test signature and exam		Prerequisite: BGRMA1HNEC BGRMA1KTNC BGRMA1ENND BGRMA1ANND
Responsible: László HANKA	Position: associate professor	Faculty and Institute name: Bánki Donát Faculty of Mechanical and Safety Engineering, Institute of Mechatronics and Vehicle Engineering

Course Description

The course gives an overall review of linear algebra. The major materials to study include operations with matrices, determinants, inverse of a matrix. The course also covers procedures for solving systems of linear equations, Gauss-, and Gauss-Jordan elimination, Cramer's rule. The students will acquire the knowledge of eigenvalue and eigenvector of a linear map and it's applications. The subject also contains functions of several variables, partial derivatives, and their applications, local extrema of a two variable function, error estimation. The subject also contains theory of series, several tests for convergence of a number series, for positive and alternating series. The major material is the theory of power series, Taylor series and their applications, function value approximation and evaluating definite integrals using Taylor series. The subject also contains theory of ODE-s, separable and first order linear differential equations, method of variation of constant, and second order linear differential equations with constant coefficients, method of undeterminded coefficients. The course also covers Laplace transform and it's application for solving linear differential equations. And the subject contains probability theory, combinatorics, Bayes theorem, and the theorem of total probability. Moreover the course covers discrete and continuous probaility distributions and their description, expected value and standard deviation, and some special distributions, binomial, Poisson, exponential and normal distribution, and their applications.

Literature

Compulsory:-
Recommended:
1. Thomas' Calculus , 11th Edition, ISBN 0321185587, by Thomas, George B.; Weir, Maurice D.; and Giordano , Frank R., published by Pearson Education, Inc, Addison-Wesley
2. Gilbert Strang: Calculus, Wellesley-Cambridge press
3. Zorich: Mathematical analysis I., ISBN 3-540-40386-8 Springer-Verlag Berlin Heidelberg New York
4. Demidovich: Problems in mathematical analysis, Mir publishers, Moscow
5. J. Stewart: Calculus, Brooks/Cole, USA, ISBN-13: 978-0-8400-5818-8, 2012
6. Kuttler: Elementray linear algebra, Saylor, 2012
7. Strang: Linear algebra and its applications, Brooks/Cole,USA, 1998
8. W. Feller.: Probability theory and its applications. Princeton, USA, 1968
9. Sheldon Ross: A first course in probability. Prentice Hall, California, 2010.
10. Blanchard-Devaney-Hall: Differential equations. Brooks and Cole, USA, 2012.
11. William F. Trench: Elementary differential equations. San Antonio, Texas, Usa, 2013