FIZ 272E - Computational Methods in Physics

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DAYS and HOURS: Please visit https://www.sis.itu.edu.tr/

Office Hours: Please send an **e-mail** for a personal meeting.

TOPICS:
1. Introduction to MATLAB/GNU Octave
2. Random numbers, basic Monte Carlo simulations
3. Eigenvalues and eigenvectors of a matrix
4. Data analysis, interpolation and curve fitting
5. Numerical quadrature
6. Solutions of ordinary differential equations
7. Basics of finite differences method

LANGUAGE(S):
The main language of the course will be **MATLAB/GNU Octave** but you will be free to use any other programming language. In this case, you must be ready to explain your code.

GRADING POLICY:

Quiz Average	30%
Midterm Exam	30%
Final Exam	40%

QUIZ ASSIGNMENTS:
You will be **free to cooperate** in quiz assignments and working with a friend is encouraged. Please remember that you will be responsible for your code and be expected to explain your answer. Quizzes will be assigned on NINOVA. **Belated and/or e-mailed assignments will not be accepted**. You must upload your quiz to NINOVA before the deadline. All assignments showing an effort for a solution will be **fully graded**.

REFERENCES:
- *Basic Concepts in Computational Physics*, B.A. Stickler, E. Schachinger, Springer (2016)
- *Applied Numerical Methods with MATLAB (3rd Ed.)*, S.C. Chapra, McGraw Hill (2012)
- *Numerical Analysis*, R.L. Burden, J.D. Faires, Brook/Cole Publishing Co. (1997)
- *Computational Physics*, R.H. Landau, M.J.P. Mejia, John Wiley & Sons, Inc. (1997)
- *Numerical Recipes in C*, W.H. Press et al., Cambridge University Press (1992)

OTHER:
The students are **required to check the NINOVA system on a daily basis**. All the announcements made via NINOVA will be considered read and understood by the students.