SYLLABUS

SUBJECT: NUMERICAL METHODS

TEACHER: ANDRZEJ MUSHAK, PhD

COURSE DESCRIPTION:
Numeral methods are one of the branches of the applied mathematics. Their application in practice is especially important. Numerical methods are used then, when a studied problem does not have an analytical solution or taking advantage of such solutions is really difficult in consideration of their complexity. The exactness of calculations can be beforehand set and chosen depending on necessities. The course objective is to acquaint the students with the chosen numerical methods and implementation of algorithms of these chosen numerical methods.

LECTURE:
Interpolation of the function, approximation of the function, numerical integration, solution of the algebraic systems of the linear equation, approximate solution of nonlinear equations and their systems.

LEARNING OUTCOMES:
By the end of the course students will have the following abilities:
- to use the chosen numerical methods,
- to implement the known algorithms of numerical methods,
- to use software packages of the mathematical analysis and interpretation of the results.

GRADING POLICY:
LECTURE: Written test.
CLASSES: Defence of laboratory works.

TIMETABLE:
LECTURE: 2 hours/every week
CLASSES: 2 hours/every week

TEXTBOOK AND REQUIRED MATERIALS:

1. Zenon Fortuna, Bohdan Macukow, Janusz Wąsowski *Metody numeryczne,* Wydanie siódme Wydawnictwa Naukowo-Techniczne, Warszawa, 2005.
2. A. Björck, G. Dahlquist, *Metody numeryczne*, Państwowe Wydawnictwo Naukowe, Warszawa 1987.
3. M. Dryja, J. i M. Jankowscy: *Przegląd metod i algorytmów numerycznych.* Cz. 2. WNT, Warszawa 1982.
4. A. Kiełbasiński, H. Schwetlick: *Numeryczna algebra liniowa. Wprowadzenie do obliczeń zautomatyzowanych.* WNT, Warszawa 1994.
5. J. Stoer, R. Bulirsch: *Wstęp do analizy numerycznej.* PWN, Warszawa 1987.