

Numerical Mathematics

Lecturer: Ryzhkova I.
Status: Elective. 8 term.

Prerequisite courses:

- Mathematical Analysis
- Linear Algebra
- ODE

Annotation: Direct and iterative methods for solving of systems of algebraic linear equations. Finding of eigenvalues and eigenvectors of a matrix. Rootfinding of one-dimensional nonlinear equations. Interpolation and extrapolation of functions. Approximate calculation of integrals. Numeric methods for solving of ordinary differential equations. General principles of error analysis: a-priori (forward and backward) and a-posteriori analysis. Condition number of a problem, stability, convergence, and other characteristics of numeric methods.

Methods of training : lectures (32 hours) and exercises (32 hours).

Form of the final test: examination (four-level evaluation scale)/test (two-level evaluation scale)

Teaching materials and reference books:

1. Форсайт Дж., Малькольм М., Моулер К. - Машинные методы математических вычислений, М., Мир, 1980.
2. Форсайт Дж., Моулер К. - Численное решение линейных алгебраических уравнений, М., Мир, 1969.
3. Quarteroni A., Sacco R., Saleri F. - Numerical mathematics, Springer-Verlag, 2005.