1 Semester

Programming - introduction to Python, basic OOP

Linear algebra - matrices, introduction to number theory(primitive roots, residues)

Mathematical analysis - graphics of functions, derivatives, serieses(single variable)

2 Semester

Mathematical analysis - integrals(single variable).

Discrete math - basic combinatorics, graphs(basic), Catalan numbers, generating functions(basic)

Analytical geometry(1 + 2 semester) - 2nd order curves, scalar and vector multiplication, mapping functions, properties of certain 2nd order curves

Linear algebra - eigenvalues(eigen vectors, Jordan form and so on), functions from matrices.

Programming - complex oop, basic algorithms

3 Semester

Programming - numpy and its applications

Algebra and number theory - different algebraic structures, mappings. Their numerous applications(Bernside lemma, proof of angle trisection impossibility)

4 Semester

Differential geometry and topology(3 + 4 semester) - basic diff geom and topology. Focused on manifolds

Differential equations(3 + 4 semester) - methods to solve different differential equations, proof of their correctness.

Mathematical analysis(3 + 4) - functions of several variables(integrals, gradients, graphics). Fourier series

Programming - basic networking(sockets, wsgi, selenium);

5 Semester

Algebraic structures - advanced algebra(topics varied a lot that is hard to encount all of them)

Measure theory - introduction to measure theory. Work with numerous new spaces(or deeper work with old ones)

6 Semester

Probability theory and statistics - basic distributions, probability theory and how to work with them in python

Databases - SQL syntax

Machine learning - regression algorithms, nn, introduction to computer vision.

Computer visualization - Wolfram alpha

Mechanics - laws applied to different systems in newton and lagrange mechanics

complex analysis - residues, usage in number theory, mapping functions

Functional analysis - basic functionals, operators.

All books listed on our website http://www.mechmat.univ.kiev.ua/golovna/fakul-tet/biblioteka/