

**Guidance and mentoring.** During their first week, every student will be assigned a faculty mentor who will help them devise a study plan and find a thesis advisor by the end of the first year. The thesis advisor may not necessarily be a KSE affiliated researcher.

**Faculty.** KSE has its own international team of researchers, which will be growing every year. Additional lecture courses and research work will be organised through our **partnerships** with the [Kyiv Academic University](#), Institutes of [Mathematics](#) and [Theoretical Physics](#) of the National Academy of Sciences of Ukraine, the [International Centre for Mathematics in Ukraine](#) (ICMU), and prominent **visiting faculty** from foreign research centers.

**Introduction to research in Mathematics.** Students will decide whether they want to specialize in Algebra, Geometry/Topology, Analysis, or Discrete Mathematics. This choice will influence their required coursework. Every term, students attend a Master's seminar, in which they give presentations on topics of their choice, under the guidance of the faculty members leading the seminar. The final term will be devoted to work on their Master's thesis.

### **First year**

8 elective courses  
Master's seminar

### **Second year**

3 elective courses  
Master's seminar  
work on thesis

## Graduate program in mathematics: Mathematical disciplines offer

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### Algebra and Algebraic Geometry

commutative algebra  
sheaves and cohomology  
algebraic geometry  
algebraic number theory\*  
modular forms and elliptic curves\*  
topics in algebra\*\*

### Geometry and Topology

differential geometry  
algebraic topology  
Lie groups and representation theory  
complex geometry\*  
topics in geometry\*\*

### Analysis

partial differential equations  
dynamical systems and ergodic theory  
probability and stochastic processes  
harmonic analysis  
measure theory  
topics in analysis\*\*

### Other

formalization of mathematics and computer assisted proofs  
analytic number theory\*  
logic and model theory\*  
additive combinatorics\*  
probabilistic combinatorics\*  
topics in combinatorics\*\*

\* course offered once in 2 years

\*\* courses on advanced topics, picked by the faculty every year