

Faculty of Computer Science and Mathematics  
Information on the German-Russian double master's programme  
between the University of Passau and  
National Research University – Higher School of Economics (HSE)  
Nizhny Novgorod  
as part of the degree programme  
M.Sc. Computational Mathematics

Students enrolled in the M.Sc. Computational Mathematics programme have the opportunity to gain two degrees: a Master of Science in Computational Mathematics from the University of Passau and a Master of Science in Mathematics from the National Research University – Higher School of Economics (HSE) in Nizhny Novgorod.

### Admission requirements

To be eligible for this double-degree programme, students from Passau must be enrolled in the M.Sc. Computational Mathematics programme<sup>1</sup> (or have gained a favourable result in the selection process) at the University of Passau and have had their application approved by Professor Tobias Kaiser.

Approved applicants have to conclude a Learning Agreement, which includes details on the courses to be completed at the host university and their acceptance for credit at the home university.

All courses in this programme are taught in English at both institutions. It is therefore necessary that applicants submit an English language certificate at level B2 of the Common European Framework of Reference for Languages (CEFR), such as:

- TOEFL (567 paper-based, 87 internet-based, ITP 543 'silver' or above),
- IELTS (score 5.5),
- or an equivalent language certificate.
- Evidence that you completed your prior undergraduate or secondary education in English counts as proof of English language proficiency.

Knowledge of German or Russian are not an admission requirement; however, it is recommended that students have German or Russian language skills at level A1 CEFR or higher.

To join the programme, students from HSE Nizhny Novgorod should have a first university degree equivalent to the German bachelor's degree with a minimum result of 2.7 under the German grading system. This degree must have been gained in a three-year full-time programme of study in mathematics or a related discipline with a mathematics component of at least 110 ECTS credits. Those who have not attained a minimum grade of or equivalent to 2.7 may still apply if they are among the best 70% of graduates of their cohort.

### Application and selection process

At the University of Passau, students are selected and admitted to the double-degree programme in a two-step process that takes into account their academic achievements and their motivation for joining the programme.

If you wish to join this programme, please apply online at the International Office ([www.uni-passau.de/index.php?id=4864](http://www.uni-passau.de/index.php?id=4864)) **by 28 February**. If your application is successful, you will then have to register with HSE Nizhny Novgorod using the application form, which can be found at [www.hse.ru/admissions/graduate-apply](http://www.hse.ru/admissions/graduate-apply), and contact the Programme Co-ordinator, Ivan D. Remizov, ([iremizov@hse.ru](mailto:iremizov@hse.ru)) by no later than **15 May**.

Any assessments still outstanding at the time of application may be completed by the end of the summer semester. In that case, your admission is only preliminary until all required documents have been submitted.

Participants can complete their year in Nizhny Novgorod flexibly at the beginning, the middle or the end of the Computational Mathematics programme. However, the double master's application procedure is carried out only once a year and the move to the other university always takes place at the start of the winter semester.

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<sup>1</sup>For more information on the M.Sc. Computational Mathematics, see [www.uni-passau.de/en/msc-compmaths](http://www.uni-passau.de/en/msc-compmaths).

Your application to the International Office should include:

- the online application form<sup>2</sup>,
- a chronological curriculum vitae
- a cover letter in which you outline your motivation for the programme
- a relevant language certificate
- if applicable: an up-to-date student record/transcript (e.g. HISQIS print-out)

OR

- a bachelor's or equivalent degree certificate and transcript/student record as well as proof of successful completion of the selection process (offer letter) for  
M.Sc. Computational Mathematics

Please send your application to:

University of Passau  
International Office  
Administration building  
Innstr. 41  
94032 Passau

In a first step, the programme coordinators of the sending institution select suitable candidates. For the University of Passau, this is Professor Tobias Kaiser; for HSE Nizhny Novgorod, Ivan D. Remizov.

**Application process for students who finish their undergraduate degree during the winter semester**

- 1) **By 15 January** of your final semester: apply for a place on the M.Sc. Computational Mathematics programme of the University of Passau
- 2) Selection procedure takes place in February
- 3) Decision on admission to the M.Sc. Computational Mathematics programme for the summer semester
- 4) **By 28 February:** apply for the **double master's programme** at the International Office
- 5) Await decision on admission to the double master's programme
- 6) **By 15 May:** register with HSE Nizhny Novgorod

**Standard duration and ECTS credits**

4 semesters  
120 ECTS credits

**Mutual recognition of credits**

Credits gained at the home institution are recognised by the host institution following a consultation with the respective programme co-ordinator. Programme participants can choose whether to write the master's thesis in Passau or Nizhny Novgorod.

**Degrees**

You will gain one degree from each university::

- University of Passau: Master of Science (M.Sc.) in Computational Mathematics
- HSE Nizhny Novgorod: Master of Science (M.Sc.) in Mathematics

**Cost**

If you are enrolled in the double master's programme, you are exempt from paying tuition fees at the host institution; however, you will still have to cover your cost of living, health and accident insurance premiums, the costs involved in gaining a visa and residence permit, travel expenses etc.

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<sup>2</sup> Online application form (German): <https://passau.moveon4.de/form/576a86d583fb960632f225fd/deu>

**Contact and  
further details**

Chair of Pure Mathematics  
Professor Tobias Kaiser  
Room IM 228, Innstr. 33  
Phone: +49 851 509 3138  
E-mail: [tobias.kaiser@uni-passau.de](mailto:tobias.kaiser@uni-passau.de)

Information from HSE Nizhny Novgorod on the master's programme in  
Mathematics: <https://nnov.hse.ru/en/ma/math/>

## Courses at HSE Nizhny Novgorod – acceptance for credit at the University of Passau

Module	Credits	Accepted as
Preparation of Master's thesis	18	Compulsory Module
Master's thesis	3	Compulsory Module
Research seminar under the Master's programme	25	Compulsory Module
Systems Topology and Dynamics	6	Compulsory Elective Module DOS
Hyperbolic Dynamics	5	Compulsory Elective Module DOS
Foliation Topology and Geometry	6	Compulsory Elective Module AGC
Numerical and Analytical Methods for Dynamic Systems	5	Compulsory Elective Module ANAT
History and Methodology of Mathematics	6	Compulsory Elective Module A
Mathematical Methods in Natural Science	6	Compulsory Elective Module A
Work placement (research internship)	6	Compulsory Elective Module KCLT
Work placement (teaching internship)	3	Compulsory Elective Module KCLT
Term paper	6	Compulsory Elective Module KCLT
Binding Theory	6	Compulsory Elective Module AGC
Riemannian Geometry	5	Compulsory Elective Module AGC
Lie Algebra	5	Compulsory Elective Module AGC
Complex Dynamics and Fractal Geometry	6	Compulsory Elective Module DOS
Single Parameter Semigroups and Evolution Equations	5	Compulsory Elective Module DOS
Ergodic Theory	5	Compulsory Elective Module DOS
Qualitative Theory of Dynamical Systems on Manifolds	6	Compulsory Elective Module DOS
Mathematical Methods in Theoretical Physics	6	Compulsory Elective Module A

### Abbreviations:

A	-	Applications
AGC	-	Algebra, Geometry and Cryptography
ANAT	-	Analysis, Numerics and Approximation Theory
DOS	-	Dynamical Systems and Optimisation
KCLT	-	Key Competencies and Language Training

**Courses and corresponding ECTS credits within the  
M.Sc. Computational Mathematics at the University of Passau**

<b>Module</b>	<b>ECTS credits</b>
Preparation of master's thesis	30*
Seminar 1	5
Seminar 2	5
Real Algebraic Geometry	9
Computational Algebraic Geometry	9
Constructive Approximation	9
Approximation Theory	9
Geometric Modelling	9
Web Safety	6
Theory of Mathematical Systems	9
Semigroup Theory	7
Queuing Systems	6
Data Science laboratory classes	6
Professional internship	4
Research Methods and Technical Writing	5

Credits awarded at HSE Nizhny Novgorod for each accepted course shall be equivalent to the number of ECTS credits.

\* The master's thesis module includes the preparation of the thesis (27 ECTS credits) and its presentation (3 ECTS credits).