PURE MATHEMATICS - PH.D.

College of Arts and Sciences
Department of Mathematical Sciences
www.kent.edu/math

About This Program

The Ph.D. degree in Pure Mathematics is for students interested in becoming professional scholars, college and university teachers or independent workers in private, industrial or government research institutions. Kent State's pure mathematics Ph.D. program is one of six in the state public university system, and one of only two in Northeast Ohio.

In broad terms, the faculty areas of research lie in functional and harmonic analysis, convex and algebraic geometry, Lie representation theory, approximation theory, finite groups, character theory, number theory and probability and stochastic processes. Original research in pure mathematics is required, and the Ph.D. dissertation must be orally defended. Two years of graduate coursework and three years of research are typical.

Contact Information

- **Artem Zvavitch** | azvavitc@kent.edu | 330-672-3316
- Connect with an Admissions Counselor: U.S. Student | International Student

Program Delivery

- **Delivery:**
  - In person
- **Location:**
  - Kent Campus

Examples of Possible Careers and Salaries*

Data scientists and mathematical science occupations, all other

- 30.9% much faster than the average
- 33,200 number of jobs
- $98,230 potential earnings

Mathematical science teachers, postsecondary

- 1.3% slower than the average
- 60,100 number of jobs
- $73,650 potential earnings

Mathematicians

- 3.0% about as fast as the average
- 2,900 number of jobs
- $110,860 potential earnings

Natural sciences managers

- 4.8% about as fast as the average
- 71,400 number of jobs
- $137,940 potential earnings

Secondary school teachers, except special and career/technical education

- 3.8% about as fast as the average
- 1,050,800 number of jobs
- $62,870 potential earnings

Statisticians

- 34.6% much faster than the average
- 42,700 number of jobs
- $92,270 potential earnings

* Source of occupation titles and labor data comes from the U.S. Bureau of Labor Statistics' Occupational Outlook Handbook. Data comprises projected percent change in employment over the next 10 years; nation-wide employment numbers; and the yearly median wage at which half of the workers in the occupation earned more than that amount and half earned less.

For more information about graduate admissions, visit the graduate admission website. For more information on international admissions, visit the international admission website.

Admission Requirements

- Bachelor's degree or higher from an accredited college or university
- Minimum 3.000 GPA on a 4.000-point scale
- Official transcript(s)
- Goal Statement
- Résumé or vita
- Three letters of recommendation
- English language proficiency - all international students must provide proof of English language proficiency (unless they meet specific exceptions to waive) by earning one of the following:[1]
  - Minimum 71 TOEFL iBT score
  - Minimum 6.0 IELTS score
  - Minimum 50 PTE score
  - Minimum 100 DET score

[1] International applicants who do not meet the above test scores may be considered for conditional admission.

Application Deadlines

- **Fall Semester**
  - Application deadline: March 1
- **Spring Semester**
  - Application deadline: October 1
- **Summer Term**
  - Application deadline: March 1

All application materials (including applicable fee, transcripts, recommendation letters, etc.) submitted after these deadlines will be considered on a space-available basis.

Program Requirements

Major Requirements

Code	Title	Credit Hours
Major Requirements		
Mathematics (MATH) Doctoral Electives (70000 or 80000 level) [1]		12-42
Mathematics Electives, choose two and a half sequences from the following: [2]		18
MATH 71051 & MATH 71052	ABSTRACT ALGEBRA I and ABSTRACT ALGEBRA II	
MATH 72051 & MATH 72052	FUNCTIONS OF A REAL VARIABLE I and FUNCTIONS OF A REAL VARIABLE II	
MATH 72151 & MATH 72152	FUNCTIONS OF A COMPLEX VARIABLE I and FUNCTIONS OF A COMPLEX VARIABLE II	
Culminating Requirement		
MATH 87199	DISSERTATION I [3]	30
Minimum Total Credit Hours for Post-Baccalaureate Students		**90**
Minimum Total Credit Hours for Post-Master's Students		**60**

1. Students may petition to have specific course requirements waived if minimum B grade was obtained for an equivalent course at another institution. The basic courses will prepare the student for the candidacy examination. Students still must meet the minimum credit hours for the degree (60 for post-master's and 90 for post-baccalaureate).
2. Each student is required to pass the departmental qualifying examination at the doctoral level in algebra and analysis (real and complex).
3. Each doctoral candidate, upon admission to candidacy, must register for MATH 87199 for a total of 30 credit hours. It is expected that a doctoral candidate will continuously register for Dissertation I, and thereafter MATH 87299, each semester, until all requirements for the degree have been met. It is expected that candidates will present the results of their research in a defense open to students and faculty, at which the dissertation will be presented an defended before the dissertation committee.

Graduation Requirements

Minimum Major GPA	Minimum Overall GPA
-	3.000

- Students present at least one seminar during their graduate career.

Candidacy for Degree

This examination will be a comprehensive examination in the field of the major subject, and will be a substantially deeper test than the qualifying examination.

Program Learning Outcomes

Graduates of this program will be able to:

1. Understand and appreciate connections among different subdisciplines of mathematics.
2. Be aware of and understand a broad range of mathematical subdisciplines.
3. Obtain a broader and deeper understanding of core mathematics subdisciplines of algebra and analysis.
4. Obtain a deep understanding of some subdiscipline.
5. Reason in mathematical arguments at a deep level, including using precise definitions, articulating assumptions and reasoning logically to conclusions.
6. Engage effectively in problem solving, including exploring examples, devising and testing conjectures and assessing the correctness of solutions.
7. Approach mathematical problems creatively, including trying multiple approaches and modifying problems when necessary to make them more tractable.
8. Develop and carry out a research program in mathematics.
9. Communicate mathematics clearly both orally and in writing.
10. Teach university-level mathematics effectively.