Master of Science in Applied Mathematics
Department of Mathematics
210 S. 10th St., Indiana, PA 15705
Phone: 724-357-2608

Program Website:

https://www.iup.edu/math-computer-sciences/grad/applied-mathematics-ms/index.html
https://www.iup.edu/math-computer-sciences/grad/index.html

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Introduction

Welcome to the Department of Mathematical and Computer Sciences! We are delighted that you have decided to join us.

This handbook was developed to answer frequent and important questions related to the M.S in Applied Mathematics program. It does not replace student advising, but is offered as a means of assisting that process. We encourage you to read this handbook carefully, as it will facilitate your advancement through the program. We also expect that you will familiarize yourself with the Graduate School Catalog as it details addresses Graduate School policies (https://www.iup.edu/registrar/catalog/index.html).

Using this handbook effectively will enhance the advisement process and enable students to take a more active role in attaining their personal and professional goals. Please contact the program coordinators if you cannot locate information you need in this handbook.

Whether you take the time to review this handbook in depth or not, you will be held accountable to the program's governing principles.

IUP's Civility Statement

As a university of different peoples and perspectives, IUP aspires to promote the growth of all people in their academic, professional, social, and personal lives

Financial Assistance

IUP Office of Financial Aid: www.iup.edu/financialaid/

Graduate Assistantships
- https://www.iup.edu/admissions/graduate/financialaid/index.html
- Office of Financial Aid: www.iup.edu/financialaid/
- Program/Department Awards – optional

Academic Advisement

- Each student will have an academic advisor, who is responsible for providing advice on course selection.
- Each student is responsible for producing a tentative time plan based on the course rotation and individual interest prior to meeting with the advisor.

Campus Resources & Student Support

The School of Graduate Studies and Research: www.iup.edu/graduatestudies/
Graduate Catalog: https://www.iup.edu/registrar/catalog/index.html
Office of Student Billing: https://www.iup.edu/student-billing/
Office of the Registrar: www.iup.edu/registrar/
Disability Support Services: www.iup.edu/disabilitysupport/
Office of Social Equity:

Graduate Student Assembly

The Graduate Student Assembly (GSA) represents the graduate student body's interests at IUP and within the Indiana community. The GSA makes recommendations related University-wide and graduate-specific policies and in areas of concern in the cultural, intellectual, and social life of the part- and full-time graduate student. Visit https://www.iup.edu/graduatestudies/resources-for-current-students/student-engagement/graduate-student-assembly/index.html for more information.

Programs and Degrees

Master's Program

The MS program in Applied Mathematics is designed to produce graduates who are marketable in industry, government, and education. The program is also appropriate for professionals who wish to add to their skills and for secondary mathematics and science teachers who wish to gain a deeper understanding of how mathematics and statistics can be used to solve applied problems. It also provides a solid background for those planning to enter a PhD program.

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Faculty members offer courses in the areas of traditional applied mathematics, operations research, computer science and statistics. The department houses its own computer facilities with which faculty and students engage in activities such as simulation and statistical analysis. Students utilize quantitative modeling techniques, including probability, statistics, optimization, and simulation, to the solution of data-driven, real-world problems. Most classes are offered at times convenient for nontraditional students who wish to advance their careers in applied mathematics, secondary education, or statistics. 12738DTd(-[)Da5.7 3f tc5.4 (d)-1.5 9eii n S2.4 (tpe1.1 7n)-4.8 (i)-1.5 9earioo

The MS in Applied Mathematics consists of the following graduate courses: (Total 33–36 credits)

I. CORE COURSES* (15 CREDITS)

MATH 545: Deterministic Models in Operations Research (3 credits)
MATH 546: Probabilistic Models in Operations Research (3 credits)
MATH 563: Mathematical Statistics I (3 credits)
MATH 564: Mathematical Statistics II (3 credits)
MATH 625: Analysis for Applied Mathematics (3 credits)

*Required unless comparable courses have been taken at the undergraduate level. No more than 3 credits may be waived from a total of 30 credits of coursework.

II. CONTROLLED ELECTIVES† (15 CREDITS)

MATH 523: Complex Variables (3 credits)
MATH 547: Modeling and Simulation (3 credits)
MATH 551: Numerical Methods for Supercomputers (3 credits)
MATH 640: Numerical Mathematics (3 credits)
MATH 641: Ordinary and Partial Differential Equations (3 credits)
MATH 643: Graphs, Networks, and Combinatorics (3 credits)
MATH 645: Nonlinear Programming Models (3 credits)
MATH 647: Advanced Simulation (3 credits)
MATH 665: Applied Regression Analysis and Design of Experiments (3 credits)
MATH 667: Applied Statistical Methods (3 credits)

†At least 12 credits must be at the 600 level.

III. ADDITIONAL ELECTIVES‡

Other graduate-

*Required unless comparable courses have been taken at the undergraduate level. No more than 3 credits may be waived from a total of 30 credits of coursework.

II. CONTROLLED ELECTIVES (18–21 CREDITS)) †

1. Choose two from: MAED 611, MAED 613, MAED 614, MAED 654
2. Choose two from: MATH 640, 641, MATH 643, MATH 645, MATH 665, MATH 667
3. Choose one from: MATH 521, MATH 523, MATH 527, MATH 553, MATH 576
4.

MGMT 637 - Operations and Supply Chain Management Credits: 3
QBUS 601 - Mathematical Modeling and Decision Making Credits: 3

III. Additional Electives‡

Other graduate-level mathematics courses may be selected with the approval of the student's advisor. Also, with the advisor's approval, up to six credit hours of graduate work may be taken in disciplines such as chemistry, computer science, economics, finance, management information systems, and physics.

‡ The MS in Applied Mathematics requires a minimum of 27 cr. of es-2.8 5 (c)1[he M6cse w.

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‡ The MS in Applied Mathematics requires a minimum of 27 cr. of course work in addition to the research requirement listed below.

IV. RESEARCH REQUIREMENTS (3–6 CREDITS)

Option I MATH 795: Thesis (3 credits)   or
Option II   MATH 698: Internship (6 credits).

Total Required Credits: 33-36

Course Descriptions
 https://www.iup.edu/math-computer-sciences/grad/applied-mathematics-ms/course-requirements.html

Course Rotations*

Even Year		Odd Year	
Fall	Spring	Fall	Spring
MATH 546 (Probabilistic Models in OR) (Req) MATH 641 (ODE/PDE) MATH 667 (Applied Statistical Methods) MATH 547 (Modeling and Simulation)	MATH 647 (Advanced Simulation) MATH 665 (Applied Regression Analysis and Design of Experiments) MATH 550 (Topics in Applied Computational Mathematics)	MATH 563 (Mathematical Statistics I) (Req) MATH 625 (Applied Mathematical Analysis) (Req) MATH 640 (Numerical Mathematics)	MATH 545 (Deterministic Models in OR) (Req) MATH 564 (Mathematical Statistics II) (Req) MATH 645 (Nonlinear optimization)- Alternates with MATH 643 (Graphs, Combinatorics, Networks)

* If you are in the community-college track, please meet with Dr. Adkins or Dr. Chrispell to determine your schedule.

All courses listed above are usually offered during late afternoon to evening on Monday to Thursday.

A program assessment exam will be offered every fall semester for students who completed 18 credits prior to the fall semester. The goal of this exam will be to assess student retention of core concepts from courses taken in the program.

Degree Completion

Requirements for graduation include that each student must complete at least 9 courses and fulfill all program requirements including five required courses (italic text in the course rotation table) and five elective courses, plus 6 credits in internship or 3 credits in thesis. You must maintain a minimum GPA of 3.0. At least 50% of your total credits must be at or above the 600 level. The program coordinator will review the graduation application according to the curriculum requirements.

For more information, view the Graduate Catalog: https://www.iup.edu/registrar/catalog/index.html

Thesis and/or Dissertation Completion

Thesis Defense Protocol

- x The candidate must send the thesis to the committee members at least two weeks prior to the day of the defense.
- x

Internship Qualifications:

All graduate interns must have completed a minimum of 12 semester hours, with a minimum 3.0 GPA, before their internships commence.

All interns must submit a resume approved by the internship coordinator. It is recommended that this step be completed at least one full semester prior to the semester that the student wishes to do the internship.

No interns may earn more than 6 credits for an internship. Forty hours of work equals one credit hour, so a 6-credit internship requires 240 hours of internship work.

Graduate students must register for the departmental internship course MATH 698 to receive IUP credits for the internship.

Interns must also complete the math department's electronic experiential education information form before commencing their internship.

Intern Responsibility:

Interns are expected to complete the following requirements:

- x   Record daily activity logs.
- x   Provide weekly updates to the faculty supervisor.
- x   Write a final written report.
- x   Give a final oral presentation.

The log should list the tasks that are performed each day. It should also mention skills and tools that are learned or used. It may include personal impressions and feelings about the job.

Signature Page

My signature below indicates that I am responsible for reading and understanding the information provided and referenced in this department/program student handbook.

_____[please initial] I understand my program coordinator may share this document with the School of Graduate Studies and Research.

_____
Print Name

_____
Signature

_____
Date

Submit to Dr. John Chrispell by the end of the first week of classes

The Department of Mathematical and Computer Sciences will keep this signed document on file.